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VOTER PSYCHOLOGY AND THE CARBON TAX

*Gary M. Lucas, Jr.**

ABSTRACT

Economists across the political spectrum argue that a carbon tax is the most effective and economically efficient policy for addressing climate change. Voters, however, strongly oppose the carbon tax and instead favor "green" subsidies and command-and-control regulations. If carefully designed, these policies might complement a carbon tax, but by themselves, they will make global warming mitigation incredibly expensive and perhaps even infeasible. Moreover, if poorly designed, subsidies and regulations can be counterproductive.

This Article argues that the public dislikes the carbon tax because the tax possesses attributes that make it psychologically unappealing relative to other climate policy instruments. The Article also argues that even if carbon tax proponents eventually persuade voters to accept a carbon tax, voters are biased in favor of particular design features that would make the tax less efficient. The Article discusses ways to overcome the problems that voter psychology creates. These include a communications strategy designed to combat voter bias and the controversial proposition that bureaucrats, who are somewhat insulated from public pressure, might adopt a carbon tax administratively. The Article also contributes to the burgeoning literature on how psychology affects the law and public policy.

* Professor of Law, Texas A&M University School of Law. For comments on an earlier draft, I thank Marjorie Kornhauser, Felix Mormann, and Jack Manhire. For helpful thoughts and ideas, I also thank participants in the George Mason University Economics Department's Wednesday Public Choice Seminar (especially Bryan Caplan and Alex Tabarrok) and the 2016 Annual Conference of the Southeastern Association of Law Schools. For research assistance, I thank Jillian Loh.

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INTRODUCTION

Climate policy faces an uncertain future. On the one hand, President Trump has called global warming a “hoax,”¹ and he has indicated that he will “cancel” the Paris Agreement on climate change² and dismantle the Environmental Protection Agency’s Clean Power Plan.³

1. President Trump has said various times and in various media that climate change is a “hoax.” See, e.g., Louis Jacobson, *Trump Says U.S. Pulling Out of Paris Climate Agreement*, POLITIFACT (June 1, 2017), <http://www.politifact.com/truth-o-meter/promises/trumpometer/promise/1379/cancel-paris-climate-agreement/> [perma: <http://perma.cc/6JN7-Y8CS>].

2. Philip Rucker & Jenna Johnson, *Trump Announces U.S. Will Exit Paris Climate Deal, Sparking Criticism at*

On the other hand, a number of influential conservatives have now acknowledged that climate change is a problem and advocate a large role for government in resolving it.⁴ Some commentators have even speculated that President Trump might use revenue from a national carbon tax to pay for his plan to increase infrastructure spending and cut income taxes.⁵ Moreover, even if the Trump Administration does nothing to address climate change, many states have adopted or are considering ambitious proposals to address global warming, including cap-and-trade programs, carbon taxes, and renewable portfolio standards.⁶ Finally, a majority of the American public believes that global warming is a real problem that the government should address, which increases the likelihood that the federal government will eventually take significant action.⁷

If and when policy makers intervene, economists across the political spectrum argue that a carbon tax is the most effective and economically efficient policy available.⁸ The public, however, overwhelmingly opposes taxing carbon.⁹ Instead of supporting the solution

Home and Abroad, WASH. POST (June 1, 2017), http://www.washingtonpost.com/politics/trump-to-announce-us-will-exit-paris-climate-deal/2017/06/01/fbcb0196-46da-11e7-bcde-624ad94170ab_story.html?utm_term=.8ae7b2f3089c [perma: <http://perma.cc/5DDI-PSY7>].

3. Exec. Order No. 13,783, 82 Fed. Reg. 16,093 (Mar. 31, 2017), *reprinted as amended in* 42 U.S.C. § 13201; *President Trump Remarks at Senator Strange Campaign Rally*, C-SPAN (Sept. 22, 2017), <http://www.c-span.org/video/?434480-1/president-trump-campaigns-alabama-senator-luther-strange> [perma: <http://perma.cc/5775-F7FE>].

4. *E.g.*, John Schwartz, 'A Conservative Climate Solution': Republican Group Calls for Carbon Tax, N.Y. TIMES (Feb. 7, 2017), http://www.nytimes.com/2017/02/07/science/a-conservative-climate-solution-republican-group-calls-for-carbon-tax.html?_r=2 [perma: <http://perma.cc/HAD7-GX26>]; George P. Shultz & James A. Baker III, *A Conservative Answer to Climate Change*, WALL ST. J. (Feb. 7, 2017), <http://www.wsj.com/articles/a-conservative-answer-to-climate-change-1486512334> [perma: <http://perma.cc/3H9T-84XR>].

5. *E.g.*, Harold Hedelman, *How Could Trump Spend a \$1.2T Climate Dividend*, BUSINESS CLIMATE LEADERS (Feb. 1, 2017), <http://www.businessclimateleaders.org/blog/2017/2/8/how-could-trump-spend-a-12t-climate-dividend> [perma: <http://perma.cc/ZMG3-5HX9>]; Jerry Taylor, *Carbon Tax, RIP?*, NISKANEN CTR. (Nov. 15, 2016), <http://niskanencenter.org/blog/carbon-tax-rip/> [perma: <http://perma.cc/L9YW-MGK9>].

6. Felix Mormann, *Constitutional Challenges and Regulatory Opportunities for State Climate Policy Innovation*, 41 HARV. ENVT. L. REV. 189, 190 (2017); Barry G. Rabe, *A New Era in States' Climate Policies?*, in CHANGING CLIMATE POLITICS: U.S. POLICIES AND CIVIC ACTION 55, 63–78 (Yael Wolinsky-Nahmias ed., 2015); Yoram Bauman & Charles Komanoff, *Opportunities for Carbon Taxes at the State Level*, CARBON TAX CTR., <http://www.carbontax.org/states/> [perma: <http://perma.cc/R9TG-3AQK>] (last visited Oct. 16, 2017); Peter Vail & Dallas Burtraw, *A Look at Six State Proposals to Tax Carbon*, RESOURCES FOR THE FUTURE: COMMON RESOURCES BLOG (Mar. 18, 2016), <http://www.rff.org/blog/2016/look-six-state-proposals-tax-carbon> [perma: <http://perma.cc/EC3Z-S6PN>].

7. *See* ANTHONY LEISEROWITZ ET AL., CLIMATE CHANGE IN THE AMERICAN MIND 3–4 (Mar. 2015) [hereinafter LEISEROWITZ ET AL., AMERICAN MIND], <http://environment.yale.edu/climate-communication/files/Global-Warming-CCAM-March-2015.pdf> [perma: <http://perma.cc/9YP8-ESVK>]; Matthew C. Nisbet & Teresa Myers, *Twenty Years of Public Opinion About Global Warming*, 71 PUB. OPINION Q. 444, 450 (2007); *Environment*, GALLUP, <http://www.gallup.com/poll/1615/environment.aspx> [perma: <http://perma.cc/QPZ9-Y9QV>] (last visited Oct. 16, 2017).

8. For lists of prominent conservative and liberal economists who advocate a carbon tax, see SHI-LING HSU, THE CASE FOR A CARBON TAX: GETTING PAST OUR HANG-UPS TO EFFECTIVE CLIMATE POLICY 183–86 (2011) [hereinafter Hsu, CASE FOR A CARBON TAX]; WILLIAM NORDHAUS, THE CLIMATE CASINO: RISK, UNCERTAINTY, AND ECONOMICS FOR A WARMING WORLD 314 (2013); *Conservatives*, CARBON TAX CTR., <http://www.carbontax.org/conservatives/> [perma: <http://perma.cc/LR7P-YQCJ>] (last visited Oct. 16, 2017).

9. *See, e.g.*, DAVID AMDUR ET AL., NAT'L SURVEYS ON ENERGY & ENV'T, PUBLIC VIEWS ON A CARBON TAX DEPEND ON THE PROPOSED USE OF REVENUE 3 (2014), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2652403 [perma: <http://perma.cc/9YP8-ESVK>].

recommended by policy experts, the public favors green subsidies and command-and-control regulations.¹⁰ If carefully designed, these policies might complement a carbon tax, but by themselves, they will make global warming mitigation incredibly expensive and perhaps even infeasible.¹¹ Moreover, if poorly designed, subsidies and regulations can be counterproductive.¹²

This Article argues that the public dislikes the carbon tax because the tax possesses attributes that make it psychologically unappealing relative to other climate policy instruments. Unlike policy experts, voters spend little time considering policy proposals and evaluate them superficially. This increases the likelihood that they will rely on potentially misleading decision heuristics and makes them more vulnerable to cognitive and emotional biases and to interest groups, politicians, and others who may benefit from exploiting those biases.¹³ In this Article I argue, for example, that in evaluating climate policies, voters engage in an intuitive cost-benefit analysis that, due to various cognitive biases, ignores the benefits of the carbon tax while also exaggerating its costs relative to other climate policies. Simply put, voters are biased against the carbon tax—a fact that poses a significant challenge to carbon tax proponents.

The Article further argues that even if proponents can somehow persuade voters to support a carbon tax, voters are biased in favor of particular design features that would make the tax less efficient. For example, an efficient tax would apply economy-wide with few exemptions. But public opinion polls and evidence from countries that have adopted carbon taxes suggest that, largely for psychological reasons, voters are more likely to support a carbon tax if the government exempts certain sectors of the economy.¹⁴

The Article makes an original contribution to the legal literature by explaining in detail the heuristics and biases that impose barriers to the adoption of an efficient carbon tax. The Article also contributes to the burgeoning literature on how voter psychology affects the law and public policy.¹⁵

For the many scientists and policy makers concerned about global warming, the carbon tax represents the best hope for substantially reducing carbon emissions at an acceptable

<http://perma.cc/3ZHR-5WX5>] (finding that when no use of the revenue was specified, only 34% of those surveyed supported a carbon tax); BARRY G. RABE ET AL., NAT'L SURVEYS ON ENERGY & ENV'T, PUBLIC SUPPORT FOR REGULATION OF POWER PLANT EMISSIONS UNDER THE CLEAN POWER PLAN 4 (2015) [hereinafter RABE ET AL., PUBLIC SUPPORT FOR REGULATION], <http://closup.umich.edu/files/ieep-nsee-2015-clean-power-plan.pdf> [perma: <http://perma.cc/VS9V-AMHJ>] (finding that only 31% of adults support their state "[i]ncreasing taxes on ALL fossil fuels used in generating electricity in order to reduce greenhouse gas emissions"); RES. FOR THE FUTURE, N.Y. TIMES & STANFORD UNIV., GLOBAL WARMING NATIONAL POLL 44, 46 (2015), <http://www.rff.org/files/sharepoint/Documents/RFF-NYTimes-Stanford-global-warming-poll-Jan-2015-topline-part-3.pdf> [perma: <http://perma.cc/4BHX-LBB9>] (finding that only 25% of adults support a tax on electricity and 36% support a tax on gasoline to reduce global warming).

10. See *infra* Part II.A for an analysis of public opinion regarding climate policy instruments.

11. See *infra* Part I.B.

12. See *infra* Part I.B.

13. See *infra* Part II.B. Heuristics are rules of thumb that simplify decisions but that sometimes produce systematic errors. See Thomas Gilovich et al., *Preface* to *HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT*, at xv, xv (Thomas Gilovich et al. eds., 8th prtg. 2009).

14. See *infra* Part III.B.

15. For a review of the literature, see generally Gary M. Lucas, Jr. & Slavisa Tasic, *Behavioral Public Choice and the Law*, 118 W. VA. L. REV. 199 (2015).

cost.¹⁶ To realize this goal, policy makers must devise ways to overcome the psychological hurdles that impede adoption of an efficient carbon tax. To that end, the Article discusses potential solutions to the problems posed by voters' anti-carbon-tax bias. These include a communications strategy designed to combat bias and the controversial proposition that bureaucrats, who are more insulated from voter influence than politicians, might circumvent the legislative process and adopt a carbon tax administratively.

Section I provides background by briefly describing why economists and climate policy experts favor a carbon tax as well as why green subsidies and command-and-control regulations are at best insufficient and at worst inefficient and counterproductive. Section II discusses the influence of psychology on voters' preferences with respect to climate policy instruments and why voters are biased against the carbon tax. Section III shifts the focus from whether the government should adopt a carbon tax to the details of what the carbon tax might look like if adopted. Specifically, Section III explains why voters are biased in favor of particular design features that would make the tax less efficient. Section IV discusses possibilities for overcoming the psychological hurdles that impede adoption of an efficient carbon tax.

I. THE ECONOMIC CASE FOR A CARBON TAX

This Section briefly explains why economists favor addressing global warming using a carbon tax. Part I.A discusses why the carbon tax is such an attractive policy. Part I.B describes the problems associated with other climate policies. I intend for this Section to provide only the background needed to understand the rest of the Article, so the discussion is not comprehensive. Moreover, this Section discusses a theoretically optimal carbon tax, which I admit places the policy in the best light possible. I discuss the practical problems associated with implementation in Section III.

A. *What Makes the Carbon Tax an Attractive Policy*

The basic case for a carbon tax is textbook economics.¹⁷ By contributing to global warming, people who consume carbon-intensive goods impose a cost, or negative externality, on society. The market prices of carbon-intensive goods do not reflect the carbon externality, so consumers buy more of those goods than they would if prices reflected all social costs.¹⁸ This means that some carbon-intensive goods are produced and consumed even though their social value is less than their social cost, a condition that is economically inefficient.¹⁹ The standard remedy for negative externalities is to impose what economists refer to as a Pigouvian tax (named after the economist Arthur Pigou).²⁰ Taxing goods that produce negative externalities increases their price to reflect their full social cost. In this

16. Ian Parry, *Summary for Policymakers, in* IMPLEMENTING A US CARBON TAX: CHALLENGES AND DEBATES, at xxiii, xxv (Ian Parry et al. eds., 2015) (noting that "there is near-universal agreement among economists that [carbon pricing] will be essential if US emissions are ultimately to be rolled back at reasonable cost").

17. See JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 134–46 (2d ed. 2007); HARVEY S. ROSEN & TED GAYER, PUBLIC FINANCE 85–94 (8th ed. 2008).

18. N. GREGORY MANKIW, PRINCIPLES OF MICROECONOMICS 197–99 (6th ed. 2007).

19. *Id.* This condition is economically inefficient because the quantity of the carbon-intensive good produced is greater than the quantity that would be produced if all social costs were considered. *Id.* at 198–99.

20. *Id.* at 202–04.

case, the optimal Pigouvian tax equals the marginal social cost of emitting carbon,²¹ which economists have estimated by forecasting the likely damage caused by global warming.²² An optimal tax would force consumers and producers to internalize the carbon externality and reduce the production and consumption of carbon-intensive goods to the economically efficient level.

In addition to this simple logic, economists point to four features of the carbon tax that make it especially attractive vis-à-vis other climate policies. First, the tax could be broad-based and apply upstream directly to the small number of firms that extract, process, or import fossil fuels.²³ Fossil fuel suppliers would then pass on most of the cost to consumers, thereby increasing the prices of carbon-intensive goods, which would encourage emissions reduction across all sectors of the economy and avoid the inefficient reallocation of resources from taxed to untaxed sectors.²⁴ A broad-based carbon tax would incentivize everyone—from homeowners to drivers to power companies—to reduce emissions.²⁵

Second, a carbon tax would minimize the cost of emissions reduction.²⁶ Some abatement opportunities cost more than others. With a carbon tax in place, consumers and producers who can abate emissions at a cost less than that of the tax will do so, and those who cannot will simply pay the tax. This means that the marginal cost of abatement will be uniform (i.e., equal to the tax rate) throughout the economy so that society cannot cheaply reallocate abatement from one economic sector to another.²⁷

Third, a carbon tax could raise significant revenue. The government could use this revenue to fund additional spending, to reduce the deficit, or to cut income and other distortionary taxes that reduce the incentive to work and save, and that adversely affect economic growth.²⁸ In particular, using the revenue to cut distortionary taxes would avoid much of the economic damage that a carbon tax would otherwise impose, thereby substantially reducing the cost of addressing global warming.²⁹

The government could also use carbon tax revenue to address one of the most highly visible problems with the tax—the fact that it would be regressive. While economists debate exactly how regressive a carbon tax would be, the burden of it would likely fall disproportionately upon the poor given that they spend a larger share of their incomes on

21. *Id.* at 203.

22. *E.g.*, INTERAGENCY WORKING GRP. ON SOC. COST OF GREENHOUSE GASES, U.S. GOV'T, TECHNICAL UPDATE OF THE SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866, at 4 (2016).

23. Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499, 501–29 (2009) (noting that the government could cover virtually all emissions from fossil fuels by imposing a carbon tax upstream at fewer than three thousand points, such as coal mines and oil refineries).

24. *See id.*

25. *See id.*

26. *See* ROSEN & GAYER, *supra* note 17, at 87–88.

27. *Id.* at 87.

28. Robertson C. Williams III & Casey J. Wichman, *Macroeconomic Effects of Carbon Taxes*, in IMPLEMENTING A US CARBON TAX: CHALLENGES AND DEBATES, *supra* note 16, at 83, 86–91.

29. *Id.* at 84–89; *see also* JARED C. CARBONE ET AL., RES. FOR THE FUTURE, DEFICIT REDUCTION AND CARBON TAXES: BUDGETARY, ECONOMIC, AND DISTRIBUTIONAL IMPACTS 7–8 (2013), <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-Rpt-Carbhone.et.al.CarbonTaxes.pdf> [perma: <http://perma.cc/P3A4-D7V9>]; DALE W. JORGENSEN ET AL., DOUBLE DIVIDEND: ENVIRONMENTAL TAXES AND FISCAL REFORM IN THE UNITED STATES 334 (2013); Lawrence H. Goulder, *Climate Change Policy's Interactions with the Tax System*, 40 ENERGY ECON. 53, 54–9 (2013).

carbon-intensive goods.³⁰ Fortunately, economists estimate that the government could eliminate the burden on the poor—for example, by mailing them rebate checks or increasing the earned income tax credit—using only a small fraction of carbon tax revenue.³¹

Finally, a carbon tax could include carbon tariffs (sometimes called “border tax adjustments”) to cope with free riders and with leakage.³² Although addressing climate change requires global cooperation, each country has an incentive to avoid the costs of emissions reduction while free riding on the efforts of others.³³ The United States could potentially deal with this problem by imposing carbon tariffs on imports from countries that do not adopt climate policies of their own. Carbon tariffs could also address leakage, which occurs when production of carbon-intensive goods shifts to countries that do not tax or regulate carbon emissions.³⁴ Tariffs reduce the benefits of relocating production to renegade countries that act as free riders.³⁵

B. Why Other Policies Can Be Problematic

In addition to or in lieu of a carbon tax, the government could address climate change via a cap-and-trade program, command-and-control regulations, or green subsidies. This Part explains why these policies can be problematic.

1. Cap-and-Trade

Under a cap-and-trade program, the government would restrict carbon emissions by creating a limited number of emissions permits and requiring that regulated firms obtain and then surrender a permit for each ton of carbon emitted.³⁶ After the government created and distributed the permits, firms could buy and sell them on a secondary market.³⁷

In theory, a cap-and-trade program could have effects similar to a broad-based carbon tax so long as it applied upstream to fossil fuel suppliers and the government initially distributed carbon permits by auction.³⁸ Fossil fuel suppliers would increase the prices of fossil fuels to reflect the cost of the carbon permits.³⁹ As a result, as with a carbon tax, the prices of goods would increase in proportion to their carbon intensity.⁴⁰

But even in its theoretically ideal form, cap-and-trade would simply mimic the effects

30. Adele Morris & Aparna Mathur, *The Distributional Burden of a Carbon Tax: Evidence and Implications for Policy*, in *IMPLEMENTING A US CARBON TAX: CHALLENGES AND DEBATES*, *supra* note 16, at 97, 101–07.

31. Aparna Mathur & Adele C. Morris, *Distributional Effects of a Carbon Tax in Broader U.S. Fiscal Reform*, 66 *ENERGY POL’Y* 326, 333 (2014).

32. Metcalf & Weisbach, *supra* note 23, at 540–52.

33. *Id.* at 540.

34. *Id.* at 502.

35. *Id.* at 545–49.

36. Robert N. Stavins, *A Meaningful U.S. Cap-and-Trade System to Address Climate Change*, 32 *HARV. ENVTL. L. REV.* 293, 298 (2008).

37. *Id.*

38. ROSEN & GAYER, *supra* note 17, at 90–94; Stavins, *supra* note 36, at 305–10.

39. Stavins, *supra* note 36, at 310.

40. *Id.*

of a carbon tax while adding significant complexity.⁴¹ Moreover, in practice, to reduce opposition among regulated industries, governments that have adopted cap-and-trade programs have often chosen not to auction permits but instead to give them away to the firms that must reduce their emissions.⁴² Firms that receive permits for free would still incur a cost if they later surrendered the permits to cover their emissions; specifically, they would incur the opportunity cost of not selling the permits on the secondary market.⁴³ Firms will generally pass this cost on to consumers by raising prices despite the fact that the firms themselves did not pay for the permits.⁴⁴ As a result, a cap-and-trade program in which the government gives permits away for free effectively becomes a carbon tax, returning the tax revenue to the regulated firms.⁴⁵ This practice would result in windfall profits for shareholders and also increases the program's overall cost by forfeiting auction revenue that the government could have used to cut distortionary taxes.⁴⁶

In addition, in real-world cap-and-trade programs, prices of emissions permits have proven extremely volatile.⁴⁷ Price volatility is problematic because it introduces risk for investors, complicates planning by firms, and makes firms less willing to develop clean technologies.⁴⁸ In contrast to cap-and-trade, a carbon tax avoids price volatility because the price of emissions does not change unless the government changes the tax rate.⁴⁹ For this and other more technical reasons, many economists prefer a carbon tax to cap-and-trade despite the fact that it is theoretically possible for the government to efficiently price carbon emissions using either approach.⁵⁰

2. Command-and-Control Regulations and Green Subsidies

Traditionally, the federal government has addressed environmental problems through command-and-control regulations and green subsidies. In the climate context, command-and-control regulations mandate that regulated firms adopt a particular emissions-abatement technology or achieve a minimal level of performance in reducing emissions.⁵¹

41. See Barry G. Rabe, *The "Impossible Dream" of Carbon Taxes: Is the "Best Answer" a Political Non-Starter?*, in GREENHOUSE GOVERNANCE: ADDRESSING CLIMATE CHANGE IN AMERICA 126, 131 (Barry G. Rabe ed., 2010) [hereinafter Rabe, *Carbon Taxes*].

42. See MICHAEL J. GRAETZ, *THE END OF ENERGY: THE UNMAKING OF AMERICA'S ENVIRONMENT, SECURITY, AND INDEPENDENCE* 207–16 (2011); Gary M. Lucas, Jr., *The Taxation of Emissions Permits Distributed for Free as Part of a Carbon Cap-and-Trade Program*, 1 GEO. WASH. J. ENERGY & ENVTL. L. 16, 16 (2010).

43. See GRAETZ, *supra* note 42, at 235–37.

44. See *id.* at 236–37.

45. See *id.*; see also CONG. BUDGET OFFICE, *TRADE-OFFS IN ALLOCATING ALLOWANCES FOR CO₂ EMISSIONS* 2–5 (2017), http://www.cbo.gov/ftpdocs/89xx/doc8946/04-25-Cap_Trade.pdf [perma: <http://perma.cc/W7YG-3GXZ>] (discussing why a firm receiving a permit for free would raise prices and, as a result, experience a windfall).

46. Goulder, *supra* note 29, at 57.

47. See GRAETZ, *supra* note 42, at 207; NORDHAUS, *supra* note 8, at 235–39.

48. NORDHAUS, *supra* note 8, at 239; Alan Krupnick & Ian Parry, *What Is the Best Policy Instrument for Reducing CO₂ Emissions?*, in FISCAL POLICY TO MITIGATE CLIMATE CHANGE: A GUIDE FOR POLICYMAKERS 1, 14 (Ian W.H. Parry et al. eds., 2012).

49. Krupnick & Parry, *supra* note 48, at 15.

50. E.g., Ian Parry, *Choosing Among Mitigation Instruments: How Strong Is the Case for a US Carbon Tax?*, in IMPLEMENTING A US CARBON TAX: CHALLENGES AND DEBATES, *supra* note 16, at 18, 34–35 [hereinafter Parry, *Mitigation Instruments*].

51. Gary M. Lucas, Jr., *Behavioral Public Choice and the Carbon Tax*, 2017 UTAH L. REV. 115, 127 [hereinafter

Prominent examples include regulations that require power companies to produce electricity from renewable sources or that impose fuel efficiency standards on car manufacturers.⁵² Green subsidies, on the other hand, attempt to encourage low-carbon activities and clean technologies.⁵³ Current and past examples include the income tax credit for hybrid cars as well as subsidies for corn-based ethanol, the hydrogen fuel cell, and carbon sequestration technology.⁵⁴

Addressing global warming primarily through regulations and subsidies would be much more expensive than if the government used a carbon tax.⁵⁵ Consider first the problems with regulation. As discussed above, a broad-based carbon tax would incentivize emissions reduction throughout the economy.⁵⁶ By contrast, the government could not possibly regulate all sources of emissions without massive intrusion into both the economy and people's private lives. The resulting gaps in regulation would entail missed opportunities to cheaply abate emissions.⁵⁷ Moreover, selecting the most cost-effective abatement technology or the optimal performance standard for a particular industry requires detailed information that the government cannot easily obtain, and obtaining that information is much more difficult than simply estimating the appropriate carbon tax rate.⁵⁸ Worse yet, political considerations and special interest influence plague the regulatory process.⁵⁹

The upshot is that under any real-world regulatory scheme, the marginal cost of abatement will vary significantly from one economic sector to another.⁶⁰ This means that it would be possible to achieve a given level of abatement at a lower cost. Contrast this undesirable result with a carbon tax that places a uniform price on emissions, which ultimately results in a uniform marginal cost of abatement and thereby minimizes abatement costs.

The problems that afflict regulation are so severe that the economist William Nordhaus, one of the world's leading authorities on the economics of global warming, argues that "[r]egulatory policies alone cannot come close to solving the global warming problem."⁶¹ Nordhaus suggests that "carefully designed regulations in a few areas" might play a beneficial role, but he also warns that "regulations can be very costly or even counterproductive if they are not carefully designed."⁶² Nordhaus notes that a "typical finding is that using inefficient regulations or approaches [would] double the costs" of climate change mitigation and would likely make it impossible to limit the global

Lucas, *Behavioral Public Choice*]; see also ROSEN & GAYER, *supra* note 17, at 94–95.

52. Lucas, *Behavioral Public Choice*, *supra* note 51, at 127.

53. *Id.* at 129.

54. *Id.*

55. See ALAN J. KRUPNICK ET AL., RES. FOR THE FUTURE & NAT'L ENERGY POLICY INST., TOWARD A NEW NATIONAL ENERGY POLICY: ASSESSING THE OPTIONS 69–112 (2010), http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-Rpt-NEPI%20Tech%20Manual_Final.pdf [perma: <http://perma.cc/P6KW-SD9F>].

56. See *supra* Part I.A.

57. Parry, *Mitigation Instruments*, *supra* note 50, at 27.

58. HSU, CASE FOR A CARBON TAX, *supra* note 8, at 59.

59. See *id.* at 59–60.

60. See GRUBER, *supra* note 17, at 142.

61. NORDHAUS, *supra* note 8, at 272.

62. *Id.*

temperature increase to the level that climate scientists find acceptable.⁶³ Nordhaus's view that regulation would prove more expensive than a carbon tax is well accepted among economists.⁶⁴

Similarly, green subsidies are notoriously problematic.⁶⁵ Identifying which low-carbon activities and clean technologies to subsidize requires significant information that the government cannot easily obtain.⁶⁶ As with regulations, special interest influence plagues the process, so many subsidies produce little to no environmental benefit.⁶⁷ Moreover, subsidies are costly because the government must pay for them by increasing distortionary taxes like the income tax or by increasing its budget deficit.⁶⁸ As a result, many economists are skeptical of subsidizing specific technologies and argue that, if anything, the government should limit subsidies to basic research related to climate change and renewable energy.⁶⁹

The dim view of regulations and subsidies that I have just outlined is supported by standard economic models of climate change. Those models imply that the government can optimally address global warming via a carbon tax, and that such a tax would largely eliminate the need for other policies.⁷⁰

Nonetheless, recent breakthroughs in modeling the economics of innovation have now added an important caveat to the standard analysis.⁷¹ The idea underlying these models is that innovation is path dependent because of complementarities, network effects, and high switching costs—a fact that standard models ignore.⁷² In the energy field, for example, because of the historical dominance of fossil fuels, more scientists are researching carbon-

63. *Id.* at 179.

64. See *Carbon Tax*, CHI. BOOTH: IGM FORUM (Dec. 20, 2011, 1:48 PM), http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_9Rez430SE5UA4Y [perma: <http://perma.cc/VV6K-XT8H>] (polling over fifty distinguished economists and finding that the overwhelming majority agreed that a "tax on the carbon content of fuels would be a less expensive way to reduce carbon-dioxide emissions than would a collection of policies such as 'corporate average fuel economy' requirements for automobiles").

65. For a creative proposal to reform green subsidies, see generally Felix Mormann, *Beyond Tax Credits: Smarter Tax Policy for a Cleaner, More Democratic Energy Future*, 31 YALE J. ON REG. 303 (2014).

66. See GRAETZ, *supra* note 42, at 186–87.

67. *Id.* at 187–95; see also NAT'L RES. COUNCIL COMM. ON THE EFFECTS OF PROVISIONS IN THE INTERNAL REVENUE CODE, EFFECTS OF U.S. TAX POLICY ON GREENHOUSE GAS EMISSIONS 8 (William Nordhaus et al. eds., 2013).

68. Charles L. Ballard & Steven G. Medema, *The Marginal Efficiency Effects of Taxes and Subsidies in the Presence of Externalities: A Computational Equilibrium Approach*, 52 J. PUB. ECON. 199, 214–15 (1993).

69. E.g., Richard G. Newell, *The Role of Energy Technology Policy Alongside Carbon Pricing, in IMPLEMENTING A US CARBON TAX: CHALLENGES AND DEBATES*, *supra* note 16, at 178, 188.

70. See, e.g., Zachary Liscow & Quentin Karpilow, *Innovation Snowballing and Climate Law* 18–19 (Yale Law Sch. John M. Olin Ctr. for Studies in Law, Econ. & Pub. Policy, Research Paper No. 571, May 2017) (unpublished manuscript) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2927441 [perma: <http://perma.cc/X74Z-4EDJ>]) (discussing the standard view).

71. For nontechnical introductions, see generally PHILIPPE AGHION ET AL., *PATH DEPENDENCE, INNOVATION, AND THE ECONOMICS OF CLIMATE CHANGE* (2014) [hereinafter AGHION ET AL., *PATH DEPENDENCE*] and Liscow & Karpilow, *supra* note 70. For formal modeling papers, see generally Daron Acemoglu et al., *The Environment and Directed Technical Change*, 102 AM. ECON. REV. 131 (2012); Daron Acemoglu et al., *The Environment and Directed Technical Change in a North-South Model*, 30 OXFORD REV. ECON. POL'Y 513 (2014); Daron Acemoglu et al., *Transition to Clean Technology*, 124 J. POL. ECON. 52 (2016) [hereinafter Acemoglu et al., *Transition to Clean Technology*]; and Philippe Aghion et al., *Carbon Taxes, Path Dependency, and Directed Technical Change: Evidence from the Auto Industry*, 124 J. POL. ECON. 1 (2016).

72. AGHION ET AL., *PATH DEPENDENCE*, *supra* note 71, at 6–7.

intensive technologies than clean technologies. Also, inventors and entrepreneurs have a strong incentive to develop products that leverage the existing carbon-intensive infrastructure. For example, innovations with respect to gasoline cars are easier to market than those for electric cars simply because of the high number of gas stations relative to charging stations. Finally, network effects, which exist when a product becomes more attractive because more people are using it (think of telephones), enhance the benefits of adopting carbon-intensive technologies and reduce the value to end users of unilaterally switching to clean technologies.⁷³ The end result is that the economy is currently locked into the use of fossil fuels and carbon-intensive technologies even though society would be better off with clean energy.⁷⁴ Network effects and high switching costs pose significant barriers to clean-technology innovation and to converting from and reducing reliance on fossil fuels.⁷⁵

Unlike standard economic models, models that incorporate path-dependent innovation imply a significant role for government in actively encouraging clean technologies in addition to taxing carbon.⁷⁶ Because they cannot unilaterally bring about the shift to clean energy, individual scientists, inventors, investors, and firms have an insufficient incentive to put resources into clean-technology innovations.⁷⁷ The government can overcome this inertia by making a “push” toward clean energy through green subsidies and regulations that encourage clean technologies.⁷⁸ As knowledge increases with respect to clean energy, innovators in the area will be able to “stand on the shoulders of giants.”⁷⁹ Progress will occur and costs will decline at a rapid rate. After the economy crosses some critical threshold, it will then become locked into clean energy rather than fossil fuels. At that point, the forces of path dependence (complementarities, network effects, and high switching costs) will work in favor of the environment instead of against it. Eventually, the government will no longer need to intervene to promote clean energy (except by continuing to tax carbon).⁸⁰

While models of path-dependent innovation have changed our understanding of the government’s potential role in addressing global warming, it is important to recognize that they do not justify any and all subsidies and regulations that purport to be environmentally friendly. In fact, the wrong policies could not only waste significant resources, but they could also cause the economy to become locked into a dangerous path.⁸¹ For example, Dieter Helm, a prominent British economist, has argued that the European Union’s climate policies have conferred large economic rents on special interests and have led to bad path dependence—locking in investment in costly offshore wind power at the expense of more promising renewables.⁸² Similarly, Zachary Liscow and Quentin Karpilow have argued that fuel efficiency standards for cars “may perversely undermine climate efforts to the extent that they direct innovation away from zero-emission cars and toward improving the fuel

73. *See id.*

74. *Id.*

75. *Id.*

76. Acemoglu et al., *Transition to Clean Technology*, *supra* note 71, at 85–88.

77. AGHION ET AL., *PATH DEPENDENCE*, *supra* note 71, at 7.

78. *See id.*

79. *Id.* at 6.

80. *Id.* at 8.

81. *Id.* at 9–10.

82. DIETER HELM, *THE CARBON CRUNCH* 79–103 (2015).

efficiency of fossil-fuel vehicles.”⁸³ Philippe Aghion and his colleagues have also cautioned that while policies that encourage the transition from coal to cleaner natural gas may reduce emissions in the short run, they may also lock in long-lived natural gas infrastructure, which could impede the development of renewables.⁸⁴

The takeaway then is that path-dependent innovation can justify carefully designed subsidies and regulations, but the literature in this area is in its infancy. More research is needed to determine exactly which activities and technologies the government should subsidize and encourage. In the meantime, subsidies and regulations can be wasteful and even counterproductive, especially if special interest groups play a large role in shaping them.

II. VOTER PSYCHOLOGY AND THE CHOICE OF CLIMATE POLICY INSTRUMENT

Section I explained why economists and other policy experts tout the carbon tax. This Section turns away from the experts and focuses on the public. Part II.A uses evidence from opinion polls to show that, while the public believes that global warming is a problem, it completely disagrees with policy experts about how to address it. Specifically, voters overwhelmingly reject the carbon tax, preferring command-and-control regulations and green subsidies instead. The remainder of this Section argues that certain aspects of voter psychology undermine public support for the carbon tax. Part II.B discusses in general terms why people are especially likely to rely on potentially misleading heuristics and are particularly vulnerable to cognitive and emotional biases when they act in their capacity as voters. Parts II.C through II.G describe specific biases and psychological phenomena that create hurdles to the adoption of a carbon tax. Part II.H argues that psychology explains why conservative voters disagree with conservative economists about the carbon tax.

A. Public Opinion on Climate Policy Instruments

Despite the amount of media attention given to climate change denialism, numerous polls show that most Americans believe that global warming is real, that humans are at least partly responsible for it, and that the government should adopt policies to address it.⁸⁵ Nonetheless, the public does not agree with policy experts about what the government should do. Despite the persistent pleadings of economists, polls consistently find that less than 40% of the public favors mitigating climate change via a broad-based carbon tax or by taxing gasoline, electricity, or natural gas.⁸⁶

How, then, does the public think the government should respond? Instead of a carbon tax, the public strongly supports command-and-control regulations and green subsidies. Polls consistently find broad support (frequently exceeding 70%) for various regulations, including mandatory caps on industry emissions and more stringent fuel efficiency standards for cars.⁸⁷ Similarly, strong support exists for subsidies such as tax credits for consumers

83. Liscow & Karpilow, *supra* note 70, at 41.

84. AGHION ET AL., PATH DEPENDENCE, *supra* note 71, at 12–13.

85. See *supra* note 9.

86. See *supra* notes 9–10.

87. See, e.g., KARLYN BOWMAN ET AL., AM. ENTER. INST. FOR PUB. POLICY RESEARCH, POLLS ON THE ENVIRONMENT, ENERGY, GLOBAL WARMING, AND NUCLEAR POWER 77–95 (2015), <http://www.aei.org/wp->

who purchase hybrid cars and energy-efficient appliances and tax breaks for power companies that switch to renewable energy.⁸⁸ Even Republican voters, who are generally more skeptical of the global warming threat, frequently express support for regulations and subsidies, especially environmentally friendly tax breaks.⁸⁹

Public opinion regarding cap-and-trade is more difficult to interpret. Some polls find majority support while others do not, and many voters express no opinion.⁹⁰ Perhaps the public is confused by the policy's complexity or by the fact that, while cap-and-trade functions much like a carbon tax and is sometimes referred to as "cap-and-tax" by its opponents, it also contains features reminiscent of command-and-control regulation, such as the emissions cap.

B. Voters' Susceptibility to Bias

Part II.A explained that voters are concerned about global warming, but they reject the climate policy favored by policy experts (the carbon tax) in favor of other policies (command-and-control regulations and green subsidies) that by themselves would be insufficient and perhaps even counterproductive. This disagreement between voters and policy experts is important because findings in political science suggest that voters exercise significant influence over public policy.⁹¹ The remainder of this Section argues that certain features of voter psychology render the carbon tax anathema and expose voters to manipulation by politicians and special interest groups that oppose the tax. This Part lays the foundation for that claim by summarizing recent findings in the field of behavioral public choice that suggest people are especially likely to rely on potentially misleading heuristics and are

content/uploads/2015/04/ENVIRONMENT.pdf [perma: <http://perma.cc/DY8V-4Q7W>]; LEISEROWITZ ET AL., *AMERICAN MIND*, *supra* note 7, at 20; ANTHONY LEISEROWITZ ET AL., *POLITICS & GLOBAL WARMING* 16 (2016) [hereinafter LEISEROWITZ ET AL., *GLOBAL WARMING*], <http://climatecommunication.yale.edu/wp-content/uploads/2016/12/Global-Warming-Policy-Politics-November-2016.pdf> [perma: <http://perma.cc/6GRC-2AJB>]; PEW RESEARCH CTR., *LITTLE ENTHUSIASM, FAMILIAR DIVISIONS AFTER THE GOP'S BIG MIDTERM VICTORY: MOST EXPECT OBAMA TO GET LITTLE DONE OVER NEXT TWO YEARS* 15 (2014), <http://www.people-press.org/files/2014/11/11-12-14-Post-election-release.pdf> [perma: <http://perma.cc/M7UY-FFTE>]; RES. FOR THE FUTURE, N.Y. TIMES & STANFORD UNIV., *supra* note 9, at 39; Nisbet & Myers, *supra* note 7, at 465–67; *Spring 2014 Washington Post-ABC News Poll*, WASH. POST (2014), <http://apps.washingtonpost.com/g/page/politics/june-2014-washington-post-abc-news-poll/1075/> [perma: <http://perma.cc/97X2-YWSU>].

88. *E.g.*, BOWMAN ET AL., *supra* note 82, at 77–95; LEISEROWITZ ET AL., *GLOBAL WARMING*, *supra* note 87, at 16; LEISEROWITZ ET AL., *AMERICAN MIND*, *supra* note 7, at 20; RES. FOR THE FUTURE, N.Y. TIMES & STANFORD UNIV., *supra* note 9, at 45; Nisbet & Myers, *supra* note 7, at 467.

89. *See* LEISEROWITZ ET AL., *GLOBAL WARMING*, *supra* note 87, at 16; RABE ET AL., *PUBLIC SUPPORT FOR REGULATION*, *supra* note 9, at 3; Christopher P. Borick, *American Public Opinion and Climate Change*, in *GREENHOUSE GOVERNANCE: ADDRESSING CLIMATE CHANGE IN AMERICA*, *supra* note 41, at 24, 45; *Not All Republicans Think Alike About Global Warming*, YALE PROGRAM ON CLIMATE CHANGE COMM'N (Jan. 12, 2015), <http://environment.yale.edu/climate-communication/article/not-all-republicans-think-alike-about-global-warming/> [perma: <https://perma.cc/ML2C-GQG2>].

90. *See, e.g.*, CHRISTOPHER P. BORICK ET AL., BROOKINGS INST., *CLIMATE COMPARED: PUBLIC OPINION ON CLIMATE CHANGE IN THE UNITED STATES AND CANADA* 12 (Apr. 2011), http://www.brookings.edu/wp-content/uploads/2016/06/04_climate_change_opinion.pdf [perma: <https://perma.cc/R8UR-8CJ5>]; RES. FOR THE FUTURE, N.Y. TIMES & STANFORD UNIV., *supra* note 9, at 40.

91. *E.g.*, Paul Burstein, *The Impact of Public Opinion on Public Policy: A Review and an Agenda*, 56 *POL. RES. Q.* 29, 36 (2003); Brandice Canes-Wrone et al., *Out of Step, Out of Office: Electoral Accountability and House Members' Voting*, 96 *AM. POL. SCI. REV.* 127, 137–38 (2002).

particularly vulnerable to bias and manipulation when they act in their capacity as voters.⁹²

Behavioral public choice is an emerging field that extends behavioral economics to politics and shows how mental limitations and cognitive and emotional biases adversely affect the law and public policy.⁹³ The behavioral public choice literature identifies at least three reasons that voters are especially prone to biased thinking and to using potentially misleading heuristics.⁹⁴

First, the fact that public policy is complex and the typical voter is grossly uninformed creates the perfect conditions for poor judgment.⁹⁵ Elections almost never come down to a single vote,⁹⁶ and if a particular voter makes a mistake by supporting the wrong politicians or policies, the bad consequences fall mostly on others.⁹⁷ Indeed, researchers have confirmed that voters are in fact extremely ignorant.⁹⁸ At the same time, unbiased thinking is hard; it requires significant effort, and our minds are often lazy.⁹⁹ People who are uninformed and lack motivation often analyze complex problems very superficially by invoking simple cues and decision heuristics that sometimes cause errors.¹⁰⁰ Moreover, emotions are especially likely to influence judgment and decisionmaking with respect to issues that are unfamiliar, are of little personal relevance, receive limited time and attention, and do not demand accuracy or detailed consideration.¹⁰¹ These conditions apply to most voters participating in policy debates.¹⁰² The upshot is that each individual voter can engage in lazy thinking and indulge his or her cognitive and emotional biases without personal consequence even though, in the aggregate, the results may be disastrous for society. For example, economist Bryan Caplan has presented evidence that the public suffers from “antiforeign bias, a tendency to underestimate the economic benefits of interaction with foreigners.”¹⁰³ Antiforeign bias stems from suspicion of people who are different, and it creates support for tariffs and other protectionist policies that reduce social welfare.¹⁰⁴

Second, the political process does not provide the sort of feedback that voters need to learn from their mistakes.¹⁰⁵ Sorting out the consequences of government intervention is an

92. For more comprehensive reviews, see generally Lucas & Tasic, *supra* note 15 and W. Kip Viscusi & Ted Gayer, *Behavioral Public Choice: The Behavioral Paradox of Government Policy*, 38 HARV. J.L. & PUB. POL’Y 973 (2015).

93. See Lucas & Tasic, *supra* note 15, at 202–03.

94. For a more comprehensive discussion, see *id.* at 205–12.

95. *Id.* at 209 n.47, 211–12.

96. DENNIS C. MUELLER, PUBLIC CHOICE III 304–05 (2003).

97. See Bryan Caplan, *Majorities Against Utility: Implications of the Failure of the Miracle of Aggregation*, 26 SOC. PHIL. & POL’Y 198, 207–08 (2008).

98. MICHAEL X. DELLI CARPINI & SCOTT KEETER, WHAT AMERICANS KNOW ABOUT POLITICS AND WHY IT MATTERS 62–104 (1996); ILYA SOMIN, DEMOCRACY AND POLITICAL IGNORANCE: WHY SMALLER GOVERNMENT IS SMARTER 17–61 (2013).

99. DANIEL KAHNEMAN, THINKING, FAST AND SLOW 31–49 (2011).

100. For a recent review of the literature on this point, see THOMAS GILOVICH ET AL., SOCIAL PSYCHOLOGY 281–86 (3d ed. 2012).

101. Joseph P. Forgas, *Affective Influences on Attitudes and Judgments*, in HANDBOOK OF AFFECTIVE SCIENCES 596, 596–618 (Richard J. Davidson et al. eds., 2003); Joseph P. Forgas, *Mood and Judgment: The Affect Infusion Model (AIM)*, 117 PSYCHOL. BULL. 39, 48–57 (1995).

102. See SOMIN, *supra* note 98, at 17–61; Lucas & Tasic, *supra* note 15, at 208–09.

103. BRYAN CAPLAN, THE MYTH OF THE RATIONAL VOTER: WHY DEMOCRACIES CHOOSE BAD POLICIES 36 (2007) (emphasis omitted).

104. *Id.* at 36–39.

105. Peter J. Boettke et al., *Saving Government Failure Theory from Itself: Recasting Political Economy from*

incredibly difficult task, even for policy experts.¹⁰⁶ Moreover, voters have limited incentive to avoid bias in interpreting whatever limited feedback they do receive.

Finally, voters' ignorance and lack of incentive to seek the truth leaves them exposed to politicians and special interest groups that stand to gain by preying on their vulnerabilities.¹⁰⁷ Because the personal stakes are low, voters may not adequately discount propaganda, emotional appeals, and deceptive forms of political persuasion.¹⁰⁸ In particular, psychologists who study persuasion have identified a central route and a peripheral route to changing people's attitudes.¹⁰⁹ The central route is to make high-quality arguments while the peripheral route involves manipulating superficial aspects of the message, such as employing an attractive or famous spokesperson or relying on the quantity of arguments rather than their quality. The peripheral route is especially effective when the audience lacks the knowledge or motivation to fully analyze arguments, particularly in settings involving group decisionmaking and diminished personal responsibility for outcomes.¹¹⁰ Again, these conditions characterize voting.

All of this taken together suggests that voters' evaluations of complex policies, including climate policy, will usually be superficial. Voters are likely to be distracted by irrelevant factors, to rely on faulty heuristics, to fall prey to biases, and to allow emotions to cloud their judgment. Moreover, politicians and special interest groups that have a lot to gain from deception may be able to exploit voters' vulnerabilities.

C. *What You See Is All There Is (WYSIATI) and Intuitive Cost-Benefit Analysis*

Having discussed voters' generic susceptibility to bias and manipulation, the remainder of this Section argues that psychology explains why voters reject the carbon tax in favor of other policies that would be insufficient, inefficient, or even counterproductive. The search for a psychological explanation is motivated in large part by the disagreement between voters and policy experts that I have already noted. In addition, experimental evidence suggests that people are biased against Pigouvian taxes in general.¹¹¹ In

an Austrian Perspective, 18 CONST. POL. ECON. 127, 138 (2007) ("[D]ecisions in the market to either buy or abstain from buying are a direct signal to sellers, whereas in the political process voters do not have the same extent of feedback opportunities with respect to public policy offerings because they vote only periodically for representatives and their vote is rarely decisive."); see also Bruno S. Frey & Reiner Eichenberger, *Economic Incentives Transform Psychological Anomalies*, 23 J. ECON. BEHAV. & ORG. 215, 224 (1994). For information regarding the relationship between learning and rational decisionmaking, see Jonathan Klick & Gregory Mitchell, *Government Regulation of Irrationality: Moral and Cognitive Hazards*, 90 MINN. L. REV. 1620, 1627–38 (2006).

106. See Stephen J. Choi & A.C. Pritchard, *Behavioral Economics and the SEC*, 56 STAN. L. REV. 1, 44–45 (2003) (arguing that government agencies are not immune from biases or reliance on heuristics).

107. See Timur Kuran & Cass R. Sunstein, *Availability Cascades and Risk Regulation*, 51 STAN. L. REV. 683, 733–35 (1999).

108. CAPLAN, *supra* note 103, at 178–79; see also Bruno S. Frey & Reiner Eichenberger, *Anomalies in Political Economy*, 68 PUB. CHOICE 71, 78–79 (1991); Frans van Winden, *Affective Public Choice*, in PUBLIC CHOICE AND THE CHALLENGES OF DEMOCRACY 45, 55 (José Casas Pardo & Pedro Schwartz eds., 2007).

109. Richard E. Petty et al., *Attitudes and Attitude Change*, 48 ANN. REV. PSYCHOLOGY 609, 615–34 (1997); Richard E. Petty & John T. Cacioppo, *The Elaboration Likelihood Model of Persuasion*, 19 ADVANCES EXPERIMENTAL SOC. PSYCHOL. 123, 125–26 (1986).

110. Petty & Cacioppo, *supra* note 109, at 137–61.

111. Todd L. Cherry et al., *The Impact of Trial Runs on the Acceptability of Environmental Taxes: Experimental Evidence*, 38 RESOURCE & ENERGY ECON. 84, 86 (2014) [hereinafter Cherry et al., *Trial Runs*].

experimental settings, researchers have studied support for Pigouvian taxes by creating markets for fictitious goods that generate negative externalities and then asking study participants to participate in a referendum to determine whether to correct the externalities using a tax.¹¹² In the laboratory, many people have rejected Pigouvian taxes even when the tax would have benefitted them and even when researchers carefully designed the tax so that it unambiguously enhanced the welfare of every participant in the experiment.¹¹³ In other words, aversion to Pigouvian taxes is so powerful that people will make welfare-reducing choices to avoid them. On the other hand, experimental evidence has also shown that when people gain experience with Pigouvian taxes by participating in multiple laboratory trials, support for the taxes increases dramatically.¹¹⁴ This suggests that opposition to Pigouvian taxes may be a mistake that people can correct as experience reveals the benefits that the taxes confer.

This Part considers the particular psychological biases that make the carbon tax unattractive to the public. This Part focuses on one of the most important cognitive biases that affects public policy—what you see is all there is (WYSIATI). WYSIATI describes our tendency to give too much weight to information that we are currently thinking about, while ignoring the possibility that other information might point to a different conclusion.¹¹⁵

1. WYSIATI Generally

Appreciating the importance of WYSIATI requires an understanding of how memory works and the way in which people form intuitive judgments. Because memory and intuitive judgment are crucial for understanding not only WYSIATI but also the other biases discussed below, I provide here a detailed overview of both.

You can think of memory as a network of ideas, with each idea representing a node, similar to a knot on a fisherman's net, and each node connected to other nodes via associative links.¹¹⁶ When you think of an idea, such as "eating," the node corresponding to that idea is activated.¹¹⁷ Activation of one node spreads to the nearby nodes that are connected to it and those nodes may activate as well.¹¹⁸ For example, activating the eating node causes you immediately to think of related ideas like fork and dinner.¹¹⁹

112. *E.g., id.* at 87–90; Steffen Kallbekken et al., *Do You Not Like Pigou, or Do You Not Understand Him? Tax Aversion and Revenue Recycling in the Lab*, 62 J. ENVTL. ECON. & MGT. 53, 56 (2011).

113. Cherry et al., *Trial Runs*, *supra* note 111, at 90; Kallbekken et al., *supra* note 112, at 59; Todd L. Cherry et al., *Worldviews and the Opposition to Effective Environmental Policies: Evidence from Laboratory Markets* 14 (Oct. 30, 2015) [hereinafter Cherry et al., *Worldviews*] (unpublished manuscript), http://www.econ.gatech.edu/sites/default/files/seminars/201508/55_Cherry%20Seminar.pdf [perma: <http://perma.cc/EUB2-B4FX>].

114. Cherry et al., *Trial Runs*, *supra* note 111, at 92.

115. KAHNEMAN, *supra* note 99, at 86.

116. For a more comprehensive discussion of memory as a network of ideas, see DANIEL REISBERG, *COGNITION: EXPLORING THE SCIENCE OF THE MIND*, 206–10 (5th ed. 2013). For knowledge networks in politics, see generally Milton Lodge & Kathleen M. McGraw, *Where Is the Schema? Critiques*, 85 AM. POL. SCI. REV. 1357 (1991); Kathleen M. McGraw & Marco Steenbergen, *Pictures in the Head: Memory Representations of Political Candidates*, in *POLITICAL JUDGMENT: STRUCTURE AND PROCESS* 15, 15–42 (Milton Lodge & Kathleen M. McGraw eds., 1995).

117. REISBERG, *supra* note 116, at 206.

118. *Id.*

119. *Id.*

Because activation of one node spreads to nearby nodes, the connections among nodes form retrieval paths that allow you to retrieve items from memory.¹²⁰ The stronger the connection between nodes, the more likely that activation of one node will lead to activation of the other.¹²¹ Connections are strongest when they have been rehearsed frequently and recently.¹²² Moreover, vivid stimuli and emotionally arousing information are easier to consolidate in and retrieve from memory, in part because they facilitate strong connections.¹²³ Finally, a node fires only after its activation level reaches its response threshold.¹²⁴ Because activation accumulates, a node is more likely to fire if it is connected to multiple nodes that are also firing.¹²⁵ As a result, you are more likely to think of an apple if you hear the word “fruit” in addition to the word “eat.”

When you encounter a stimulus like the word “eat,” it triggers the automatic operations of associative memory.¹²⁶ Much associative thinking occurs subconsciously.¹²⁷ If, shortly after hearing the word “eat,” you encounter the word fragment “so_p,” you are likely to think of soup rather than soap.¹²⁸ Psychologists would say that the word “eat” primes you to think of words like “soup” that are related to eating.¹²⁹ Moreover, associative memory includes not only ideas and semantic information; it also links particular stimuli to emotions, motor responses, facial expressions, and goals.¹³⁰ When you unexpectedly encounter the word “vomit,” your reaction is not simply cognitive, but also emotional and physical.

The specific memories triggered by a stimulus depend on the context and tend to be coherent.¹³¹ For example, if you work on Wall Street, the word “bank” probably evokes thoughts of money, investment firms, and related ideas. If you live near a river, you may think instead of water, fish, and floods. Psychologists refer to this process as associative coherence, which is “the pattern of automatic activation in memory [that] tends to produce a comprehensive and internally consistent interpretation of the present situation, which is causally embedded in the context of the recent past, and incorporates appropriate emotions and preparedness for likely future events and for future actions.”¹³²

Associative memory and associative coherence help us understand a key feature of intuitive judgment—the strong and automatic tendency to jump to conclusions based on

120. *Id.* at 206–10.

121. *Id.*

122. *Id.*

123. *Id.* at 266–67; see also RICHARD NISBETT & LEE ROSS, HUMAN INFERENCE: STRATEGIES AND SHORTCOMINGS OF SOCIAL JUDGMENT 45–53 (1980).

124. REISBERG, *supra* note 116, at 206.

125. *Id.* at 206–10.

126. KAHNEMAN, *supra* note 99, at 50–52.

127. *Id.* at 51–52.

128. *Id.* at 52.

129. REISBERG, *supra* note 116, at 209–10.

130. Joseph P. Forgas, *Introduction: The Role of Affect in Social Cognition*, in *FEELING AND THINKING: THE ROLE OF AFFECT IN SOCIAL COGNITION* 1, 11–14 (Joseph P. Forgas ed., 2000); Carey K. Morewedge & Daniel Kahneman, *Associative Processes in Intuitive Judgment*, 14 *TRENDS COGNITIVE SCI.* 435, 435 (2010).

131. Morewedge & Kahneman, *supra* note 130, at 435–36.

132. *Id.* at 436.

limited evidence.¹³³ This tendency is so fundamental to how the human mind works that the psychologist and Nobel laureate Daniel Kahneman coined the acronym WYSIATI—what you see is all there is—to describe it.¹³⁴

To illustrate WYSIATI, Kahneman poses the following question: “Will Mindik be a good leader? She is intelligent and strong.”¹³⁵ In response to the words “intelligent” and “strong,” the processes of associative memory and associative coherence lead us to conclude that the answer is yes. Our minds (unconsciously) construct a coherent and plausible story based upon what we know. We associate intelligence and strength with good leadership, so the notion that Mindik will be a good leader fits nicely.

Unfortunately, “strongly activated information is likely to be given more weight than it deserves and relevant knowledge that is not activated by the associative context will be underweighted or neglected.”¹³⁶ In other words, we often ignore information that is relevant to a decision or judgment simply because we are not currently thinking about it—WYSIATI. We jump to the conclusion that Mindik will be a good leader without considering the possibility that she might also be corrupt and cruel, or more generally, that our initial intuitive judgment was based on a small amount of low quality data. According to Kahneman:

You cannot help dealing with the limited information you have as if it were all there is to know. You build the best possible story from the information available to you, and if it is a good story, you believe it. Paradoxically, it is easier to construct a coherent story when you know little, when there are fewer pieces to fit into the puzzle. Our comforting conviction that the world makes sense rests on a secure foundation: our almost unlimited ability to ignore our ignorance.¹³⁷

In addition, in the quest for coherence, our minds frequently deemphasize conflicting information as a way of suppressing doubt; maintaining competing possibilities is more difficult than becoming certain.¹³⁸ So once we judge that Mindik will be a good leader, we may discount subsequent evidence suggesting otherwise.

We can try to avoid the pitfalls of WYSIATI, but doing so is hard. Resisting the urge to jump to conclusions about Mindik requires vigilance and a willingness to exert the effort required to think of reasons weighing against our intuitive judgment. Recall that our minds are frequently lazy in combating biases, so unless the stakes are high, why bother?

Kahneman uses WYSIATI to explain a large number of related cognitive biases that he and other psychologists have identified over the past several decades, including overconfidence in our own knowledge and susceptibility to framing effects.¹³⁹ If we can construct a satisfactory story based on the information currently activated in our minds, we often become overconfident in what we think we know because we fail to consider whether something critical is missing.¹⁴⁰ Moreover, “subjective confidence . . . reflects the coherence

133. See KAHNEMAN, *supra* note 99, at 86.

134. *Id.*

135. *Id.* at 85.

136. Morewedge & Kahneman, *supra* note 130, at 435.

137. KAHNEMAN, *supra* note 99, at 201.

138. *Id.* at 114, 239.

139. *Id.* at 87–88, 372.

140. *Id.* at 87.

of the story” that we have constructed, which is misleading “because poor evidence can make a very good story.”¹⁴¹

In addition, what we “see” at any given time—the information that is “on-screen” or currently activated in our minds—often depends on factors other than quality or relevance to the decision at hand. In particular, we are prone to accept the frame or characterization of the problems we encounter, and we often passively restrict our thoughts to elements and ideas made salient by the context or presentation.¹⁴² In other words, our response to a problem or answer to a question often depends critically on the associations triggered by the particular way in which the problem or question is framed. This means that information that is relevant may remain “off-screen” because it is implicit and not otherwise obvious. For example, one famous study found that people (including doctors) are more likely to opt for radiation therapy over surgery to treat lung cancer if they are told that of 100 people having surgery, 10 will die during surgery (mortality frame) than if they are told that 90 will survive (survival frame).¹⁴³ While both frames contain the same information, the survival frame apparently is less likely to trigger thoughts of death, and WYSIATI.

Because of WYSIATI, when voters think about policy proposals, we should not expect that they will refrain from jumping to conclusions simply because they are uninformed. They will instead form intuitive judgments based on the limited information that they possess and the associations triggered by the context in which they are considering the proposal. Moreover, they are unlikely to appreciate the importance of information that they do not have. In particular, voters are unlikely to seek out cost-benefit analyses prepared by experts who try to identify all possible consequences of various proposals. Instead of recognizing their own ignorance and withholding judgment or holding only highly tentative views, voters are likely to jump to conclusions and confidently embrace policies about which they know very little, as long as they can construct a plausible and coherent story as to why those policies make sense.

In addition, voters’ policy preferences will be subject to pervasive salience and framing effects.¹⁴⁴ In particular, voters will frequently focus on the obvious and intended effects of particular policies, ignoring potential but unintended consequences.¹⁴⁵ Moreover, because personal experiences and emotionally arousing information are easier to encode and retrieve from memory, voters are likely to give disproportionate weight to compelling personal narratives, extreme events, and other vivid stimuli. They are also likely to pay less attention to statistical evidence and dry analysis.¹⁴⁶

141. *Id.* at 209.

142. See Lorraine Chen Idson et al., *Overcoming Focusing Failures in Competitive Environments*, 17 J. BEHAV. DECISION MAKING 159, 160 (2004); Shane Frederick et al., *Opportunity Cost Neglect*, 36 J. CONSUMER RES. 553, 553–54 (2009).

143. Barbara J. McNeil et al., *On the Elicitation of Preferences for Alternative Therapies*, 306 NEW ENG. J. MED. 1259, 1260–61 (1982).

144. See Dennis Chong & James N. Druckman, *Framing Theory*, 10 ANN. REV. POL. SCI. 103, 104 (2007); George A. Quattrone & Amos Tversky, *Contrasting Rational and Psychological Analyses of Political Choice*, 82 AM. POL. SCI. REV. 719, 727–30 (1988).

145. See Edward J. McCaffery & Jonathan Baron, *Isolation Effects and the Neglect of Indirect Effects of Fiscal Policies*, 19 J. BEHAV. DECISION MAKING 289, 300–01 (2006).

146. See, e.g., NISBETT & ROSS, *supra* note 123, at 43–53; Ruth Hamill et al., *Insensitivity to Sample Bias: Generalizing from Atypical Cases*, 39 J. PERSONALITY & SOC. PSYCHOL. 578, 586–88 (1980); Cass R. Sunstein, Essay, *On*

2. WYSIATI and the Carbon Tax

For climate policy, WYSIATI matters because it influences which policy instruments voters prefer. Unlike economists who try to identify and measure all the potential costs and benefits of a proposed climate policy, most voters will quickly form intuitive judgments based on limited information. In particular, voters may engage in an intuitive cost-benefit analysis that accounts only for costs and benefits that are currently activated in memory—those that are on-screen.¹⁴⁷ In this subpart, I argue that WYSIATI biases voters against the carbon tax and in favor of other climate policies because the costs of the carbon tax are relatively more likely to appear on-screen, while the benefits are relatively more likely to remain off-screen. In addition, voters very likely exaggerate the cost of the carbon tax because they mistakenly equate tax payments with the policy's welfare cost.

a. *Misjudging Costs*

As discussed in Section I, economists like the carbon tax because it minimizes the cost of emissions reduction. In this context, when economists refer to cost, they mean the losses in social welfare resulting from climate policy, including the additional resources that society must use, the consumption opportunities that people must forgo, and the reduction in economic growth that occurs because of efforts to mitigate global warming.¹⁴⁸ Examples include a power company switching from cheap fossil fuels to more expensive renewable energy sources, a consumer driving less to cope with higher gasoline prices, and a decline in economic growth caused by distortions in labor and capital markets that results from the higher prices of energy-intensive goods.

Understanding the welfare cost of climate policies is important because it allows us to contrast economists' concept of cost with the public's. Learning about a policy's welfare cost requires a basic understanding of economics and an examination of economists' cost estimates—a task that most voters will avoid. The difficulty of determining welfare cost is important because psychologists who study intuitive judgment have discovered that when faced with a hard question, people tend to automatically and unconsciously substitute an easier question.¹⁴⁹ They are then confident in their response, but fail to notice the substitution.¹⁵⁰ Because the welfare cost of various climate policies is a mystery to most, voters are likely to focus on the cost that is salient to them—the potential increase in their own out-of-pocket expenses. In other words, voters substitute the easier question “Will this policy increase my out-of-pocket expenses (or those of people I care about)?” for the harder question “How much of the welfare cost of this policy will fall on me (or those I care about)?”

The public's focus on out-of-pocket expenses creates two problems. First, out-of-pocket

the Divergent American Reactions to Terrorism and Climate Change, 107 COLUM. L. REV. 503, 534–42 (2007) [hereinafter Sunstein, *Climate Change*].

147. Cf. Sunstein, *Climate Change*, *supra* note 146, at 549 (“Those who suffer from bounded rationality do care about both costs and benefits, but their assessment of these is affected by heuristics and biases, in a way that can lead to severe and systematic errors.”).

148. KRUPNICK ET AL., *supra* note 55, at 22–23.

149. KAHNEMAN, *supra* note 99, at 97–104; see generally Norbert Schwarz et al., *Assimilation and Contrast Effects in Part-Whole Question Sequences: A Conversational Logic Analysis*, 55 PUB. OPINION Q. 3, 18 (1991).

150. KAHNEMAN, *supra* note 99, at 99.

expenses are not a good proxy for the welfare cost of the carbon tax. The tax paid may be highly salient to the person paying it, but from society's perspective, the tax payment does not impose a welfare cost because it does not entail sacrificing economic resources. Instead, the tax payment is simply a transfer from the taxpayer to the government. The government can then spend the money on public goods or even return it to taxpayers via an income or payroll tax cut or via rebate checks. So if voters focus on the tax paid and ignore the possibility that the government might spend the resulting revenue in beneficial ways or return it by cutting other taxes, then they will overestimate the true welfare cost of the tax to themselves and others they care about.¹⁵¹ As discussed above, the welfare cost of the carbon tax or any climate policy includes lost resources, forgone consumption opportunities, and slower economic growth—all of which are likely invisible to those who lack training in economics. This is unfortunate because while a carbon tax entails highly visible and loathsome tax payments, it can also impose a much lower welfare cost than other policies.¹⁵²

Second, the out-of-pocket expenses associated with various climate policies are not equally salient. A carbon tax would obviously increase out-of-pocket expenditures for most people. People frequently pay for gasoline and routinely pay electric bills, so they are likely cognizant of how much they spend on these goods and of the effects of significant price changes. Moreover, many people already pay taxes on gasoline, so they know that gas taxes increase the price at the pump. The fact that a carbon tax would increase the prices of carbon-intensive goods and services is no secret and is in fact the policy's intended result.¹⁵³

The same cannot be said for command-and-control regulations and green subsidies. Neither regulations nor subsidies directly require that ordinary people pay money to the government or anyone else. To be sure, regulations increase costs incurred by regulated firms, and those firms generally pass on their costs to consumers. Similarly, the government must pay for subsidies by increasing taxes, and the tax burden ultimately falls on individuals. But these additional out-of-pocket expenses occur indirectly, are hard to identify, are incidental to the policy objective, and are unintended by policy makers. As a result, they are less salient. For example, most people probably do not realize that fuel efficiency standards add a significant amount to the price of cars.¹⁵⁴ This cost is hidden and hard even for experts to determine precisely. In addition, unlike with gasoline, people buy

151. Cf. Marjorie E. Kornhauser, *Cognitive Theory and the Delivery of Welfare Benefits*, 40 LOY. U. CHI. L.J. 253, 268 (2009) (stating that American "tradition emphasizes the negative of taxes (taking your money away) but rarely discusses the positive (what taxes can do for you)"); Shi-Ling Hsu, *Climate Policy in the Trump Era: Carbon Tax Rising?* 6 (Fla. State Univ. Coll. of Law, research paper No. 834, Mar. 14, 2017) [hereinafter Hsu, *Climate Policy*], http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2926476 [perma: <http://perma.cc/GU3C-RLHD>] (arguing that critics of carbon taxes often assume "that all carbon tax revenues would be gathered together as a pile of cash and burned").

152. Hsu, *Climate Policy*, *supra* note 151, at 38–39.

153. Cf. Erich Kirchler, *Differential Representations of Taxes: Analysis of Free Associations and Judgments of Five Employment Groups*, 27 J. SOCIO-ECONOMICS 117, 123–27 (1998) (finding that study participants' first reactions upon hearing the word "tax" were generally negative, including associating taxes with punishment).

154. See 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,623, 62,666 (Oct. 15, 2012) (to be codified at 40 C.F.R. pts. 85, 86, 600 and 49 C.F.R. pts. 523, 531, 533, 536, 537) (providing government cost estimates); Mark R. Jacobsen, *Evaluating US Fuel Economy Standards in a Model with Producer and Household Heterogeneity*, 5 AM. ECON. J. 148, 173–76 (2013) (estimating welfare losses).

cars infrequently so they are not as likely to be cognizant of any price increases resulting from regulation.

Public opinion research supports both the notion that the public uses salient, out-of-pocket expenses as a proxy for the welfare cost of proposed climate policies and the notion that the out-of-pocket expenses of regulations and subsidies are less salient than those of a carbon tax. As discussed in Part II.A of this Section, polls generally find strong support (frequently in excess of 70%) for global warming regulations and green subsidies. But these polls often fail to mention potential costs. To remedy this problem, some pollsters use two versions of the same question, one that does not refer to cost and one that indicates that the policy in question will increase the expenses of ordinary people. Support for regulations and subsidies declines substantially when costs are highlighted, and that is true even when the pollster mentions only a very small cost.¹⁵⁵ By contrast, support for a carbon tax, which is already low, does not decline much (if at all) when pollsters mention that the tax will cost the typical person a small amount.¹⁵⁶ Apparently, people automatically associate the word "tax" with the idea of cost so that mentioning cost has little effect on judgments about the carbon tax. On the other hand, references to regulations and subsidies do not automatically evoke thoughts about cost, so mentioning cost reduces support for these policies.¹⁵⁷

Recent experimental evidence reinforces these conclusions. In a carefully controlled laboratory experiment, economist David Heres and his colleagues created a market for a fictitious good that produced a negative externality.¹⁵⁸ Heres explored whether his participants would support correcting the externality via a Pigouvian tax or a subsidy, both of which were designed to produce identical consequences (including an overall increase in the participants' welfare).¹⁵⁹ Heres found evidence that when the researchers were vague about how they would redistribute any tax revenue they collected, each participant assumed that he or she would not receive any of the revenue.¹⁶⁰ As a result, the tax was unpopular.¹⁶¹ Informing the participants that they would each receive an equal share of the revenue, however, dramatically increased their perception of the benefits that would accrue to them personally as a result of the tax and substantially increased support.¹⁶²

On the other hand, when Heres and his colleagues were vague about exactly which participants would have to pay for the subsidy, each individual participant apparently did not worry that he or she would be called on to pay more than his or her fair share because

155. *E.g.*, SARAH B. MILLS ET AL., NAT'L SURVEYS ON ENERGY & ENV'T, WIDESPREAD PUBLIC SUPPORT FOR RENEWABLE ENERGY MANDATES DESPITE PROPOSED ROLLBACKS 6 (2015), <http://closup.umich.edu/files/ieep-nsee-2015-renewable-portfolio-standards.pdf> [perma: <http://perma.cc/SR2F-49NR>].

156. BORICK ET AL., *supra* note 90, at 12; NATHAN CUMMINGS FOUND., GLOBAL WARMING SURVEY 4–7 (2007), <http://thebreakthrough.org/blog/GlobalWarmingSurveyRelease92507.pdf> [perma: <http://perma.cc/6DHP-XYK3>]; Rabe, *Carbon Taxes*, *supra* note 41, at 152.

157. *Cf.* Steffen Kallbekken & Marianne Aasen, *The Demand for Earmarking: Results from a Focus Group Study*, 69 ECOLOGICAL ECON. 2183, 2186 (2010) (finding that participants in Norwegian focus groups expressed strong support for environmental subsidies, and only one participant raised the issue of how to pay for them).

158. David R. Heres et al., *The Role of Budgetary Information in the Preference for Externality-Correcting Subsidies over Taxes: A Lab Experiment on Public Support*, 66 ENVTL. RESOURCE ECON. 1, 5–11 (2017).

159. *Id.* at 6–7.

160. *Id.* at 9–11.

161. *Id.* at 8.

162. *Id.*

the vast majority of participants supported the proposal.¹⁶³ Moreover, informing the participants that they would share the burden equally had only a small effect on each participant's perception of his or her benefits from the subsidy, which suggests that the participants had assumed all along that would be the case or else had completely ignored the fact that someone would have to pay for the subsidy.¹⁶⁴

Heres's results suggest that, in the absence of information to the contrary, voters will focus on the fact that a carbon tax requires them to make tax payments, and they will ignore the possibility that the government might return the resulting revenue. On the other hand, voters likely will not pay attention to the burden imposed by green subsidies or to the question of how that burden will be distributed.

b. Misjudging Benefits

WYSIATI also disadvantages the carbon tax because the many benefits of the tax are less salient than the benefits (real or imagined) of other climate policies. The primary benefit of climate policies is that, if designed correctly, they will reduce carbon emissions and mitigate global warming. As discussed in Section I, a carbon tax can achieve this goal, but it does so in a counterintuitive way. The tax itself does not directly benefit the environment. Environmental benefits occur indirectly as people change their behavior in response to the higher prices of carbon-intensive goods. People might modify their behavior in numerous ways that are not obvious or easily predictable. In fact, economists tout the carbon tax precisely because it will encourage people to think of novel ways to reduce emissions that no one could currently imagine. But this feature makes the tax psychologically unappealing. People tend to underestimate their ability to adapt when their circumstances change for the worse.¹⁶⁵ For example, people are likely to project their current energy use into the future, ignoring how their behavior would change in response to a carbon tax. Shane Gunster reports that this is exactly what happened after the government in British Columbia announced that it was going to implement a carbon tax.¹⁶⁶ British Columbians concluded that the tax would have little effect on their behavior, and they therefore viewed it as punishment for continuing to behave in a way in which they had no choice.¹⁶⁷

In addition, the indirect manner in which the carbon tax operates greatly confuses the public. For example, when researchers interviewed focus groups from various European countries, they found that in evaluating environmental taxes like the carbon tax, people did not focus on the incentive effects of the taxes, but instead they were preoccupied with how the government would use the resulting revenue.¹⁶⁸ Many people failed to see the point of

163. *Id.*

164. *Id.* at 14.

165. George Loewenstein et al., *Projection Bias in Predicting Future Utility*, 118 Q.J. ECONOMICS 1209, 1212–13 (2003).

166. Shane Gunster, *Self-Interest, Sacrifice, and Climate Change: (Re-)Framing the British Columbia Carbon Tax*, in *THE ENVIRONMENTAL POLITICS OF SACRIFICE* 187, 197–200 (Michael Maniates & John M. Meyer eds., 2010).

167. *Id.* at 198.

168. Simon Dresner et al., *Social and Political Responses to Ecological Tax Reform in Europe: An Introduction to the Special Issue*, 34 ENERGY POL'Y 895, 901 (2006); see also Kallbekken & Aasen, *supra* note 157, at 2186–87 (finding that many of the participants in Norwegian focus groups understood the incentive effects of environmental taxes, but many still believed that the government needed to earmark revenue for environmental programs or else

an environmental tax and concluded that “it was all some kind of trick” unless the government earmarked tax revenue for environmental programs.¹⁶⁹ Moreover, the focus groups indicated that improving public transportation, developing renewable energy, and improving energy efficiency produced benefits that were more transparent than those resulting from environmental taxes.¹⁷⁰ Unlike the carbon tax, regulations and subsidies mandate or reward particular, easily identifiable actions intended to help the environment in ways that are obvious to the casual observer.¹⁷¹

Survey evidence also supports the hypothesis that people do not associate the carbon tax with environmental benefits but instead focus on its costs. In a survey conducted in Switzerland, Andrea Baranzini and Stefano Carattini found that support for a carbon tax increased when the survey question referred to it as a “climate contribution” rather than as a tax.¹⁷² Interestingly, survey respondents supported the climate contribution even though the researchers explicitly informed them that it would increase the price of gasoline and heating fuels.¹⁷³ Baranzini and Carattini noted that the term “[c]limate contribution” may signal that the climate as we know it . . . requires help, whereas a ‘tax’ may recall a threat to disposable income.”¹⁷⁴

In addition to reducing carbon emissions, a carbon tax produces several other benefits that are mostly invisible to people without significant policy expertise. As discussed in Section I, the carbon tax reduces emissions at the lowest possible cost by equalizing abatement costs across economic sectors. Additionally, it raises revenue that the government can use to address regressivity and cut distortionary taxes; it also creates the possibility for carbon tariffs to cope with free riders and leakage. Unfortunately, understanding these features of the carbon tax requires attention to policy details and at least a rudimentary knowledge of economics, so as far as the public is concerned, they might as well not exist—WYSIATI.¹⁷⁵ Not surprisingly, as a result of their survey, Baranzini and Carattini concluded “that the lack of perception of primary and ancillary benefits is one of the main barriers to the acceptability of carbon taxes.”¹⁷⁶

the taxes would not work).

169. Dresner et al., *supra* note 168, at 901; accord Håkon Sælen & Steffen Kallbekken, *A Choice Experiment on Fuel Taxation and Earmarking in Norway*, 70 *ECOLOGICAL ECON.* 2181, 2188 (2011).

170. Dresner et al., *supra* note 168, at 902.

171. In general, when faced with an environmental problem, people prefer to take action that has demonstrable gains. Anthony Patt & Richard Zeckhauser, *Action Bias and Environmental Decisions*, 21 *J. RISK & UNCERTAINTY* 45, 50–58 (2000); cf. Nathaniel O. Keohane et al., *The Choice of Regulatory Instruments in Environmental Policy*, 22 *HARV. ENVTL. L. REV.* 313, 360 (1998) (arguing that legislators prefer command-and-control instruments because they constitute a highly visible signal of strong environmental support but are also easily combined with less visible exemptions for favored firms or industries).

172. Andrea Baranzini & Stefano Carattini, *Effectiveness, Earmarking, and Labeling: Testing the Acceptability of Carbon Taxes with Survey Data*, 19 *ENVTL. ECON. & POL’Y STUD.* 197, 214 (2017).

173. *Id.* at 203.

174. *Id.* at 200.

175. Cf. Dresner et al., *supra* note 168, at 902 (finding that members of Danish and German focus groups were aware that their countries had adopted energy taxes, but were not aware that the revenue was used to cut taxes on labor).

176. Baranzini & Carattini, *supra* note 172, at 197.

D. *The Pain of Paying*

We have seen that the out-of-pocket expenditures resulting from a carbon tax are salient while the benefits are hidden. This combination of circumstances means that discussions of the tax will likely evoke what psychologists call “the pain of paying.”¹⁷⁷ Standard economic models assume that before we buy something, we (consciously or unconsciously) consider the opportunity cost of the purchase, which is the highest valued alternative good or service that we forgo if we spend our money one way instead of another.¹⁷⁸ But behavioral economists have shown that thinking about opportunity costs is hard work and unnatural, so we often fail to do it.¹⁷⁹ What then keeps spending in check? It turns out that spending money causes many of us to experience a certain amount of psychological discomfort—the pain of paying.¹⁸⁰ Unfortunately, the pain of paying is not always a reliable guide to wise spending because the degree to which we experience it depends on arbitrary situational factors (such as the method of payment or whether we think we are getting a bargain) that often have little to do with whether the purchase makes sense in light of our goals and preferences.¹⁸¹

The pain of paying almost certainly biases the public against the carbon tax and in favor of regulations and subsidies. Since it is obvious that a carbon tax will require ordinary people to pay more for carbon-intensive goods, any discussions of it will very quickly bring to mind the pain of paying.¹⁸² At the same time, the costs of regulations and subsidies are hidden, so the pain of paying is far removed from people’s thoughts about these policies.

Moreover, carbon tax payments are likely to be particularly painful. In consumer transactions, the psychological burden of the payment is usually reduced, at least to some extent, by the simultaneous receipt of a valuable good or service.¹⁸³ By contrast, the payment of a carbon tax is not accompanied by any tangible or easily identifiable immediate benefit other than, for example, obtaining the same gasoline and electricity that used to be available at a lower price. The carbon tax does of course yield benefits in terms of reduced carbon emissions and tax revenue that the government can return to taxpayers or spend on public goods. But these benefits are mostly hidden, indirect, and diffuse. As a result, paying a carbon tax is similar to paying credit card debt, which people regard as particularly irksome because payment is not clearly connected to the receipt of specific goods.¹⁸⁴

177. Drazen Prelec & George Loewenstein, *The Red and the Black: Mental Accounting of Savings and Debt*, 17 *MARKETING SCI.* 4, 4 (1998).

178. MANKIW, *supra* note 18, at 6; Armen A. Alchian, *Cost*, in 3 *INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL SCIENCES* 404, 404–15 (David L. Sills ed., 1968).

179. See generally Frederick et al., *supra* note 142; Gary M. Lucas, Jr., *Out of Sight, Out of Mind: How Opportunity Cost Neglect Undermines Democracy*, 9 *N.Y.U. J.L. & LIBERTY* 249 (2015); Stephen A. Spiller, *Opportunity Cost Consideration*, 38 *J. CONSUMER RES.* 595, 600, 607 (2011).

180. Prelec & Loewenstein, *supra* note 177, at 4.

181. See George Loewenstein & Ted O’Donoghue, “*We Can Do This the Easy Way or the Hard Way*”: *Negative Emotions, Self-Regulation, and the Law*, 73 *U. CHI. L. REV.* 183, 194–200 (2006); Prelec & Loewenstein, *supra* note 177, at 22–23.

182. Cf. Kirchler, *supra* note 153, at 123–27 (finding that study participants’ first reactions upon hearing the word “tax” were generally negative, including associating taxes with punishment).

183. Prelec & Loewenstein, *supra* note 177, at 22–23.

184. See *id.* at 23.

A growing body of evidence supports the hypothesis that many people view the prospect of paying a carbon tax as an especially loathsome burden. For example, members of German and Danish focus groups reported that they viewed the energy taxes in their respective countries as a “punishment” because reducing energy consumption was difficult for them.¹⁸⁵ They proposed instead that their governments use “carrots,” such as providing rebates to people who achieve an energy conservation target.¹⁸⁶

In contrast to the carbon tax, regulations and subsidies are often accompanied by nonenvironmental benefits that are readily identifiable and that mitigate the pain of paying any additional costs that these policies impose (assuming that any of those costs are visible in the first place). For example, people who support more stringent fuel efficiency standards can take comfort in the thought that, while they may pay more for their next car, they will also save money on gas. Similarly, a tax credit for hybrid cars makes those cars cheaper, which obviously benefits buyers of hybrid cars, even if the benefits may not outweigh the hidden cost of the tax increases needed to fund the subsidy.

Closely related to the pain of paying is the idea that a carbon tax is inferior to green subsidies because it is coercive. Numerous studies have found that in many contexts, people prefer carrots (subsidies) to sticks (taxes).¹⁸⁷ Apparently, people dislike taxes because they view them as a form of punishment—an abridgment of freedom—and they prefer instead that the government effect change by rewarding good behavior through subsidies.¹⁸⁸ But this broadly shared belief is an illusion that results from narrow framing and WYSIATI. A subsidy indirectly “punishes” those who do not qualify for it. We could frame a tax credit for people who buy hybrid cars as a tax penalty for people who do not buy hybrid cars (since the credit will result in higher tax bills for the latter group). Viewed in this light, the subsidy is just as coercive as a tax. Logically, the two descriptions are equivalent, but psychologically, they are worlds apart.

A similar framing effect biases some environmentalists against the carbon tax and in favor of regulation. These environmentalists do not like the idea of placing an explicit price on pollution because they view it as creating a license to pollute.¹⁸⁹ As Jonathan Masur and Eric Posner put it, for some environmentalists, taxing pollution “seem[s] to put a price on intrinsically valuable goods like human life and the environment, and . . . seem[s] to permit a firm to commit ongoing harm so long as it is willing to pay a fee.”¹⁹⁰ The problem with this view is that regulations also allow firms to pollute (as long as the firms are otherwise in compliance), and unlike with a carbon tax, regulations do not require that polluting firms pay for their pollution.¹⁹¹ But this fact is not obvious and WYSIATI.

185. Dresner et al., *supra* note 168, at 902.

186. *Id.*

187. *E.g.*, Todd L. Cherry et al., *The Acceptability of Efficiency-Enhancing Environmental Taxes, Subsidies and Regulation: An Experimental Investigation*, 16 ENVTL. SCI. & POL’Y 90, 95 (2012); Edward J. McCaffery & Jonathan Baron, *Thinking About Tax*, 12 PSYCHOL., PUB. POL’Y, & L. 106, 115 (2006); Linda Steg et al., *Why Are Energy Policies Acceptable and Effective?*, 38 ENV’T. & BEHAV. 92, 103 (2006); Cherry et al., *Worldviews*, *supra* note 113, at 17.

188. *See* Dresner et al., *supra* note 168, at 902.

189. *See* Keohane et al., *supra* note 171, at 354–56 (discussing this view).

190. Jonathan S. Masur & Eric A. Posner, *Toward a Pigouvian State*, 164 U. PA. L. REV. 93, 99 (2015).

191. Keohane et al., *supra* note 171, at 355 n.126.

E. Tax-Label Aversion

Americans appear to suffer from tax-label aversion.¹⁹² As a result, a policy labeled as a tax may receive less support than a similar policy that is labeled as something else. For example, rather than funding spending programs by raising taxes, the government can sometimes substitute tax expenditures, which are special tax deductions, exclusions, or credits intended to modify behavior or confer benefits upon particular categories of taxpayers.¹⁹³ While the government could accomplish the goals of many tax expenditures more simply and efficiently using direct spending, tax expenditures are more politically popular. They are especially popular among Republicans and conservatives because they can be framed as a tax cut.¹⁹⁴ Moreover, the fact that tax expenditures entail increases in overall tax rates is apparently less than obvious.

Similarly, regulations can substitute for taxes, as occurs when the government mandates that firms provide particular goods and services for free to certain customers, and the firms respond by increasing prices paid by other customers.¹⁹⁵ A likely reason that this type of regulation is popular is that it avoids the need for the government itself to pay for the goods and services by raising taxes.

A number of scholars have speculated that tax-label aversion undermines public support for the carbon tax.¹⁹⁶ For example, David Hardisty and his colleagues found that participants in their study—especially Republicans and independents—were more likely to support a policy that would increase the price of carbon-intensive goods if the researchers referred to the policy as a carbon “offset” rather than a carbon “tax.”¹⁹⁷ The existence of tax-label aversion is also consistent with efforts by those who oppose government action on climate change to rebrand carbon cap-and-trade proposals as “cap-and-tax.”¹⁹⁸ The obvious intent is to make cap-and-trade anathema to those who have a strong aversion to the

192. David Gamage & Darien Shanske, *Three Essays on Tax Salience: Market Salience and Political Salience*, 65 TAX L. REV. 19, 49–54 (2011).

193. For a classic discussion of tax expenditures, see generally STANLEY S. SURREY & PAUL R. MCDANIEL, *TAX EXPENDITURES* (1985).

194. Christopher Faricy & Christopher Ellis, *Public Attitudes Toward Social Spending in the United States: The Differences Between Direct Spending and Tax Expenditures*, 36 POL. BEHAV. 53, 71–72 (2013) (“Republicans might view tax expenditure policy as a way to have its policy cake and eat it, too: providing desirable social benefits while still adhering to the values of individual initiative and support for the private sector.”).

195. See Richard A. Posner, *Taxation by Regulation*, 2 BELL J. ECON. & MGMT. SCI. 22, 23–24 (1971).

196. E.g., NORDHAUS, *supra* note 8, at 259; Gamage & Shanske, *supra* note 192, at 51; see also GRAETZ, *supra* note 42, at 181–85.

197. David J. Hardisty et al., *A Dirty Word or a Dirty World? Attribute Framing, Political Affiliation, and Query Theory*, 21 PSYCHOL. SCI. 86, 86–88 (2010). While tax-label aversion may be particularly pronounced among American conservatives, it is not limited to the United States. See, e.g., Baranzini & Carattini, *supra* note 172, at 214 (finding that survey participants in Geneva prefer the label “climate contribution” over the label “carbon tax”); Kallbekken et al., *supra* note 112, at 62 (finding that students in Austria prefer the label “fee” over the label “tax”). But see Ana Villar & Jon A. Krosnick, *Global Warming vs. Climate Change, Taxes vs. Prices: Does Word Choice Matter?*, 105 CLIMATE CHANGE 1, 10 (2011) (asking some subjects whether they favored “[i]ncreasing gasoline prices so people either drive less or buy cars that use less gas” and other subjects whether they favored “[i]ncreasing taxes on gasoline so people either drive less or buy cars that use less gas” and finding no statistically significant difference in responses to the two questions).

198. See *The Cap and Tax Fiction*, WALL ST. J. (June 25, 2009, updated June 26, 2009, 12:01 AM), <http://www.wsj.com/articles/SB124588837560750781> [perma: <http://perma.cc/F72R-XXK7>].

dreaded t-word.

What then are the psychological mechanisms that contribute to tax-label aversion, especially as it relates to the carbon tax? Part of the explanation is that the word “tax” triggers thoughts of costs and losses, a point that I discussed in Part II.C of this Section.

In addition, among Republicans and conservatives, an aversion to the carbon tax label flows naturally from the psychology of associative memory. The word “tax” almost certainly triggers strong negative associations for many Republicans and conservatives. The Republican Party is the partisan home of the anti-tax movement. The document that describes the Party’s official platform refers frequently to the ideas that taxes are excessive, impede economic growth, and facilitate wasteful government spending.¹⁹⁹ Grover Norquist’s famous anti-tax pledge requires that signees “make a written commitment to oppose any and all tax increases” and “has become practically required for Republicans seeking office.”²⁰⁰ Some prominent commentators on the right argue that taxes are a form of theft.²⁰¹ Moreover, anti-tax sentiment among conservatives is not new and has in fact been around for decades.²⁰²

In addition to negative associations in memory, Republicans and conservatives likely also have a strong negative attitude toward taxes. The positive and negative attitudes that we have toward various categories of objects frequently serve the useful purpose of quickly alerting us to promising opportunities that are worthy of approach and dangerous threats to be avoided.²⁰³ We often form our attitudes based upon the prototype or exemplar that comes to mind when thinking about a particular category.²⁰⁴ Unfortunately, this means that we sometimes overgeneralize so that a generic attitude does not fit specific objects that are very different from our prototype or exemplar for the category to which those objects belong.²⁰⁵ For example, if your attitude toward snakes is based upon encounters with dangerous copperheads, you may react with excessive alarm at the sight of a less threatening species. Similarly, the attitude that most conservatives have toward taxes is shaped by familiar taxes such as the income tax, which, according to many conservatives, contribute to wasteful government spending and inhibit economic growth by reducing the supply of labor and capital.²⁰⁶ But this generic attitude does not necessarily match well with the less familiar carbon tax. Unlike the income tax, the primary purpose of the carbon tax is to reduce carbon emissions, not raise revenue. In fact, the government could achieve its environmental goals

199. See generally REPUBLICAN NAT’L CONVENTION, 2016 REPUBLICAN PLATFORM (2016), [http://prod-static-ngop-pbl.s3.amazonaws.com/media/documents/DRAFT_12_FINAL\[1\]-ben_1468872234.pdf](http://prod-static-ngop-pbl.s3.amazonaws.com/media/documents/DRAFT_12_FINAL[1]-ben_1468872234.pdf) [perma: <http://perma.cc/TVL6-ZKYJ>].

200. *About the Taxpayer Protection Pledge*, AM. FOR TAX REFORM, <http://www.atr.org/about-the-pledge> [perma: <http://perma.cc/S5YA-Y887>] (last visited Oct. 16, 2017).

201. E.g., Andrew Napolitano, *Taxation Is Theft*, REASON.COM (Apr. 18, 2013, 7:35 AM), <http://reason.com/archives/2013/04/18/taxation-is-theft> [http://perma.cc/2Y3M-9V7W].

202. Marjorie E. Kornhauser, *The Consistency of Conservative Tax Policy*, 108 NW. U. L. REV. 825, 850–58 (2014).

203. See generally Melissa J. Ferguson & Vivian Zayas, *Automatic Evaluation*, 18 CURRENT DIRECTIONS PSYCHOL. SCI. 362 (2009).

204. Charles G. Lord et al., *Attitude Prototypes as Determinants of Attitude-Behavior Consistency*, 46 J. PERSONALITY & SOC. PSYCHOL. 1254, 1255–56 (1984).

205. See generally Charles G. Lord et al., *Typicality Effects in Attitudes Toward Social Policies: A Concept-Mapping Approach*, 66 J. PERSONALITY & SOC. PSYCHOL. 658 (1994).

206. See Andrea Louise Campbell, *Tax Attitudes in the Obama Era*, 67 TAX L. REV. 647, 647–60 (2014).

with a revenue-neutral carbon tax in which it used all of the revenue to cut other taxes that conservatives dislike. Nonetheless, the word “tax” in the phrase “carbon tax” results in guilt by association.²⁰⁷

Of course, even if Republicans appreciated the differences between the carbon tax and the income tax, we might still expect them to object to the carbon tax because, according to conventional wisdom, they have a negative attitude toward government intervention in general. But as we have seen, many Republicans are open to addressing global warming through command-and-control regulations and green subsidies. Recognizing tax-label aversion can help us understand why green subsidies in particular are so popular among Republicans.

Green subsidies often take the form of tax expenditures such as tax credits for hybrid cars. As I have already mentioned, many Republicans prefer tax expenditures to economically equivalent direct spending programs. This could be because the cost of tax expenditures is hidden (and WYSIATI) or because tax expenditures do not fit the prototype of a government program so, unlike the carbon tax, they do not trigger the generic negative attitude toward government. In any event, Republicans’ general fondness for tax expenditures translates to the climate policy context.

F. *Manipulation, Demagoguery, and the Carbon Tax*

As discussed in Part II.B of this Section, the peripheral route to attitude change, which involves manipulating superficial aspects of a message, works best when the audience lacks the knowledge or motivation to fully analyze arguments. We have also seen that emotions are especially likely to influence judgment and decisionmaking when the relevant issue is unfamiliar, of little personal relevance, receives limited time and attention, and does not demand accuracy or detailed consideration. In particular, research on the influence of emotions on judgment has found that people sometimes invoke a feelings-as-information heuristic, appraising a stimulus by (implicitly) asking themselves, “How do I feel about it?”²⁰⁸ Unfortunately, people sometimes attribute their current affective state to the wrong stimulus, which affects their judgment.²⁰⁹ For example, people are more likely to characterize a politician positively if they just watched a happy movie than if they watched a sad one; misattributing momentary mood can influence judgment.²¹⁰ Researchers have even found that they can manipulate people’s preferences for public policy by inducing particular emotional states prior to asking survey questions.²¹¹

Given that the carbon tax is a sophisticated solution to a complex problem and that most voters have little reason to try to understand either the solution or the problem,

207. Cf. Dresner et al., *supra* note 168, at 901 (concluding that people view environmental taxes “solely as a means of raising revenue, rather than in terms of their incentive effects”).

208. E.g., Gerald L. Clore et al., *Affect as Information*, in HANDBOOK OF AFFECT AND SOCIAL COGNITION 121, 122–29 (Joseph P. Forgas ed., 2001); Gerald L. Clore, *Cognitive Phenomenology: Feelings and the Construction of Judgment*, in THE CONSTRUCTION OF SOCIAL JUDGMENTS 133, 135–40 (Leonard L. Martin & Abraham Tesser eds., 1992) [hereinafter Clore, *Cognitive Phenomenology*].

209. Clore, *Cognitive Phenomenology*, *supra* note 208, at 135–40.

210. Joseph P. Forgas & Stephanie Maylan, *After the Movies: Transient Mood and Social Judgments*, 13 PERSONALITY & SOC. PSYCHOL. BULL. 467, 472–73 (1987).

211. Jennifer S. Lerner et al., *Effects of Fear and Anger on Perceived Risks of Terrorism: A National Field Experiment*, 14 PSYCHOL. SCI. 144, 148 (2003).

conditions are ripe for manipulation, including emotional appeals and demagoguery. Recall the tendency to substitute easy questions for hard questions. “How do I feel about a carbon tax?” is an easier question than “What do I think about a carbon tax?” Not surprisingly, then, it is easy to find propaganda disseminated by prominent carbon tax opponents that contains highly inflammatory rhetoric obviously intended to evoke fear and uncertainty. Opponents claim that the carbon tax will “put the financial screws to the American people,”²¹² and that it is an “inherently parasitic” policy that embraces “the vision of transforming America into a European-style socialist welfare state.”²¹³ This type of rhetoric—though it arguably has little cognitive content or logical connection to the merits of taxing carbon—may frighten voters, causing them to attribute their fear to the tax itself rather than the emotionally charged terms chosen to describe it. Inflammatory rhetoric also takes advantage of the fact—well known among advertising executives—that people’s attitudes toward an object can be modified by associating it with emotionally arousing stimuli.²¹⁴

G. *Motivated Reasoning*

Up to this point, I have assumed that voters evaluate policies superficially, relying on emotion and simple heuristics. That assumption is consistent with the low personal stakes involved, the empirical evidence on voter ignorance, and prior literature on behavioral public choice that emphasizes voters’ lack of incentive to think deeply about politics and policy.²¹⁵ Some voters, however, may expend more effort analyzing policies because, for example, they are naturally prone to cognitive reflection,²¹⁶ or their partisan affiliation plays a large role in their social identities, which causes them to find politics engaging.²¹⁷ For these voters, we might hope that more elaborate mental processing would produce better judgment. Unfortunately, our thinking can be biased even when we exert effort.²¹⁸

One reason why is motivated reasoning. Motivated reasoning occurs when we assess information and arguments with a goal other than finding the truth.²¹⁹ In particular, we

212. *Energy Tax Policy in 2016 and Beyond: Hearing Before the S. Comm. on Fin.*, 114th Cong. 5 (2016) (statement of Sen. Orrin Hatch, Chairman, S. Comm. on Fin.).

213. Larry Bell, *Carbon Tax. . . Are Republicans Really That Stupid?*, FORBES.COM (Apr. 16, 2013, 8:00 AM), <http://www.forbes.com/sites/larrybell/2013/04/16/carbon-tax-are-republicans-really-that-stupid/#37ef5213509d> [perma: <http://perma.cc/P7P6-JWQB>].

214. See, e.g., Larry G. Gresham & Terence A. Shimp, *Attitude Toward the Advertisement and Brand Attitudes: A Classical Conditioning Perspective*, 14 J. ADVERTISING 10, 16–17 (1985); Petty et al., *supra* note 109, at 622–23; Arthur W. Staats & Carolyn K. Staats, *Attitudes Established by Classical Conditioning*, 57 J. ABNORMAL & SOC. PSYCHOL. 37, 39–40 (1958); Mark P. Zanna et al., *Positive and Negative Attitudinal Affect Established by Classical Conditioning*, 14 J. PERSONALITY & SOC. PSYCHOL. 321, 327 (1970).

215. See *supra* Part II.B.

216. See Dan M. Kahan, *Ideology, Motivated Reasoning, and Cognitive Reflection*, 8 JUDGMENT & DECISION MAKING 407, 409–10 (2013) [hereinafter Kahan, *Ideology*]; Petty & Cacioppo, *supra* note 109, at 150–52.

217. DONALD GREEN ET AL., *PARTISAN HEARTS AND MINDS: POLITICAL PARTIES AND THE SOCIAL IDENTITIES OF VOTERS* 218 (2002).

218. E.g., Petty & Cacioppo, *supra* note 109, at 162–74.

219. For overviews of motivated reasoning, see generally Emily Balci et al. & David Dunning, *See What You Want to See: Motivational Influences on Visual Perception*, 91 J. PERSONALITY & SOC. PSYCHOL. 612 (2006); David Dunning, *A Newer Look: Motivated Social Cognition and the Schematic Representation of Social Concepts*, 10 PSYCHOL. INQUIRY 1 (1999); Ziva Kunda, *The Case for Motivated Reasoning*, 108 PSYCHOL. BULL. 480 (1990).

tend to separate the world into in-groups and out-groups—us versus them.²²⁰ We then unconsciously interpret facts and other information in ways that serve the interests of in-groups.²²¹ A simple example occurs when fans of opposing football teams react to controversial plays as if they are not watching the same game.²²² Defending the views and values of an important in-group protects our social identity and signals loyalty to the group.²²³ Political partisans, for example, may be motivated to conform their views to those which are associated with their favorite political party or with people who share their ideology or political outlook. In the contemporary United States, political parties play a significant and increasingly important role in defining partisans' identities, with partisans favoring co-partisans, while disliking and discriminating against opposing partisans.²²⁴ In addition, when it comes to public policy—over which we as individual voters have little control—we can often further our own self-interest by conforming our views to those held by fellow partisans rather than by maintaining an unbiased commitment to the truth.²²⁵

An experiment by Geoffrey Cohen illustrates the tendency of partisans to conform to their party's views. Cohen found that in the absence of information about the Democratic Party's position, liberals strongly supported a proposed job-training program, reasoning that it would help the poor "find employment and support themselves."²²⁶ But when they were informed that Democratic lawmakers opposed the proposal, liberals strongly opposed it, noting that it would "dump beneficiaries into menial labor," and suggesting that it represented the abandonment of humanitarianism for rugged individualism.²²⁷ Importantly,

220. DONALD R. KINDER & CINDY D. KAM, *US AGAINST THEM: ETHNOCENTRIC FOUNDATIONS OF AMERICAN OPINION* 8 (2009).

221. *See id.* at 18–24, 89.

222. *See generally* Albert H. Hastorf & Hadley Cantril, *They Saw a Game: A Case Study*, 49 J. ABNORMAL & SOC. PSYCHOL. 129 (1954).

223. Dan M. Kahan, *The Politically Motivated Reasoning Paradigm, Part 1: What Politically Motivated Reasoning Is and How to Measure It*, in *EMERGING TRENDS IN THE SOCIAL AND BEHAVIORAL SCIENCES: AN INTERDISCIPLINARY, SEARCHABLE, AND LINKABLE RESOURCE* 1, 2 (Robert A. Scott & Stephen M. Kosslyn eds., 2016) (ebook) [hereinafter Kahan, *Politically Motivated Reasoning*]; David K. Sherman & Geoffrey I. Cohen, *The Psychology of Self-Defense: Self-Affirmation Theory*, 38 ADVANCES EXPERIMENTAL SOC. PSYCHOL. 183, 205–08 (2006).

224. GREEN ET AL., *supra* note 217, at 218–21; Shanto Iyengar et al., *Affect, Not Ideology: A Social Identity Perspective on Polarization*, 76 PUB. OPINION Q. 405, 427–28 (2012); Shanto Iyengar & Sean J. Westwood, *Fear and Loathing Across Party Lines: New Evidence on Group Polarization*, 59 AM. J. POL. SCI. 690, 703–05 (2015); Cass R. Sunstein, *Partisanship*, 2015 U. CHI. LEGAL F. 1, 11 (2015) [hereinafter Sunstein, *Partisanship*]; Jonathan Haidt & Marc J. Hetherington, *Look How Far We've Come Apart*, N.Y. TIMES: CAMPAIGN STOPS (Sept. 17, 2012, 9:48PM), http://campaignstops.blogs.nytimes.com/2012/09/17/look-how-far-weve-come-apart/?_r=0 [perma: <http://perma.cc/FU7A-FS4A>]; Leonie Huddy et al., *Measuring Partisanship as a Social Identity, Predicting Political Activism* 12–17 (July 7, 2010) (unpublished manuscript) (available at http://www.surrey.ac.uk/politics/research/researchareasofstaff/isppsummeracademy/instructors%20/HuddyMasoonAaroe_ISPP_2010.pdf [perma: <http://perma.cc/5QHS-8V49>]). The increasing importance of partisan identity has occurred at the same time as the two major political parties have become more divided along ideological, racial, religious, geographic, and cultural lines. *See* Alan I. Abramowitz & Morris P. Fiorina, *Polarized or Sorted? Just What's Wrong with Our Politics, Anyway?*, AM. INT. (Mar. 11, 2013), <http://www.the-american-interest.com/2013/03/11/polarized-or-sorted-just-whats-wrong-with-our-politics-anyway/> [perma: <https://perma.cc/556Y-KQ5J>].

225. Kahan, *Ideology*, *supra* note 216, at 409–10. For evidence of partisan bias, see Larry M. Bartels, *Beyond the Running Tally: Partisan Bias in Political Perceptions*, 24 POL. BEHAV. 117, 129–38 (2002).

226. Geoffrey I. Cohen, *Party over Policy: The Dominating Impact of Group Influence on Political Beliefs*, 85 J. PERSONALITY & SOC. PSYCHOL. 808, 819 (2003).

227. *Id.* at 819–20.

Cohen found that this outcome did not result from shallow cognitive processing or a simple adopt-the-party's-view heuristic.²²⁸ On the contrary, Cohen found evidence of deep processing.²²⁹ Nonetheless, informing liberals of the position taken by Democratic lawmakers altered the factual aspects of the policy on which they focused and the moral connotations that it invoked.²³⁰ Moreover, study participants were unaware that their partisan affiliation had biased their views and indicated that they had based their judgments on the policy's merits.²³¹

Motivated reasoning is relevant to this Article in part because opposition to taxes in general and to the carbon tax in particular has become closely linked to membership in the Republican Party and to the conservative movement. The Republican Party is known for its hostility to taxes.²³² And while some high-level members of the party once favored placing a price on carbon,²³³ the party's current official position is that the carbon tax is bad for the country.²³⁴ Among voters, Republicans are much more likely to oppose the carbon tax than Democrats.²³⁵ Moreover, opposition among Republican voters does not simply stem from skepticism about climate change. Recent polls show that many Republicans believe that climate change is occurring²³⁶ and favor government action.²³⁷ As we have seen, however, they eschew the carbon tax in favor of command-and-control regulations and green subsidies.²³⁸ A likely explanation is that opposing taxes of any kind, and especially a

228. *Id.* ("As the various depth-of-processing measures indicate, processing of message content was equally attentive regardless of whether group information was available or not.").

229. *Id.* at 819; accord Kahan, *Ideology*, *supra* note 216, at 415–17 (finding that people who score high on the cognitive reflection test, which measures the tendency to engage in conscious and effortful thinking, are more likely to engage in "ideologically motivated reasoning"); Dan M. Kahan et al., *The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks*, 2 NATURE CLIMATE CHANGE 732, 733 (2012) (finding that cultural polarization over risks posed by climate change and nuclear power is greatest among people who are high in scientific literacy and in numeracy, which measures the capacity to comprehend and use quantitative information); Charles S. Taber & Milton Lodge, *Motivated Skepticism in the Evaluation of Political Beliefs*, 50 AM. J. POL. SCI. 755, 760–67 (2006) (finding that the politically sophisticated are more apt to engage in motivated reasoning, including expending more effort denigrating counterattitudinal arguments).

230. Cohen, *supra* note 226, at 819–20.

231. *Id.* at 819.

232. See, e.g., Deborah H. Schenk, *Article: Exploiting the Salience Bias in Designing Taxes*, 28 YALE J. ON REG. 253, 309 ("Anti-tax forces, particularly the Republican party, have relentlessly driven home the point that anything that might be described as a tax increase is bad.")

233. See *infra* Part IV.A for an overview of the Republican Party's previous official platform in regard to climate change.

234. REPUBLICAN NAT'L CONVENTION, *supra* note 199, at 20.

235. See, e.g., RABE ET AL., PUBLIC SUPPORT FOR REGULATION, *supra* note 9, at 5; Borick, *supra* note 90, at 50.

236. See, e.g., SARAH B. MILLS ET AL., NAT'L SURVEYS ON ENERGY & ENV'T, FEWER AMERICANS DOUBT GLOBAL WARMING IS OCCURRING 4 (2016), <http://closup.umich.edu/files/ieep-nsee-2016-spring-climate-belief.pdf> [perma: <http://perma.cc/MS52-XA4X>] (reporting the results of thirteen polls taken between 2008 and 2016 that show that the percentage of Republicans who believe that there is solid evidence for global warming has varied from 38% to 56%).

237. See, e.g., *Public Says Climate Change Is Real*, MONMOUTH U. POLLING INST. 5 (Jan. 5, 2016), <http://www.monmouth.edu/assets/0/32212254770/32212254991/32212254992/32212254994/32212254995/30064771087/bbab2f4a-3eef-4772-9b82-8fbdd996452a.pdf> [perma: <http://perma.cc/4NPS-YUHT>] (finding that 47% of Republicans support "the U.S. government doing more to reduce the type of activities that cause climate change and sea level rise").

238. See *supra* Part II.A for a discussion of public opinion on policy instruments to address climate change.

carbon tax, has become part of what it means to be a Republican and, more generally, a conservative.

This close link between the Republican Party and opposition to the carbon tax implies that Republican voters will likely engage in motivated reasoning to defend the party line. This means that they are likely to notice aspects of the carbon tax that are inconsistent with Republican values and conservative ideology; for example, it interferes with markets and puts money in the hands of government. They are unlikely to notice aspects that conservatives ought to find appealing; for example, the tax can be revenue neutral and can be more efficient and less intrusive than alternative policies.

H. Conservative Voters Versus Conservative Economists

To summarize the discussion in this Section, voter psychology undermines support for a carbon tax. Compared to other climate policies, the costs of a carbon tax are more obvious and the benefits are less visible, both of which distort the intuitive cost-benefit analysis in which voters typically engage. In addition, tax-label aversion renders the carbon tax anathema to many Americans, especially Republicans and conservatives, even though a carbon tax could achieve its environmental goals even if it were revenue neutral. Moreover, the policy's complexity, combined with voter ignorance, exposes voters to manipulation and demagoguery. Finally, the close link between the Republican Party and carbon tax opposition means that many Republican voters will reflexively oppose the carbon tax regardless of its merits.

The discussion so far helps us understand why many conservative economists disagree with other conservatives with respect to the carbon tax. In stark contrast to the views of rank-and-file Republicans, a number of prominent conservative economists have recently promoted the idea of a policy swap in which conservatives would agree to a revenue-neutral carbon tax if environmentalists agree to eliminate global warming regulations and green subsidies.²³⁹ Why? As part of their professional training, economists encounter the economic case for Pigouvian taxes, which is covered in textbooks on introductory economics. Although it is not a panacea, training can be an effective tool for overcoming bias.²⁴⁰ In particular, conservative economists, likely because of their education, can easily distinguish the goals and features of the carbon tax from other taxes of which they are more skeptical. So a conservative economist is less likely than a conservative who lacks training in economics to suffer from tax-label aversion and to be biased by a generic, negative attitude toward taxes. Moreover, the demands of the economics profession dictate that economists avoid obvious mistakes, such as substituting an easy question ("How do I feel about a carbon tax?") for a hard question ("What do I think about a carbon tax?").

239. See, e.g., John H. Cochrane, *Carbon Tax or Carbon Rights?*, GRUMPY ECONOMIST: JOHN COCHRANE'S BLOG (Jan. 5, 2015), <http://johnhcochrane.blogspot.com/2015/01/carbon-tax-or-carbon-rights.html> [perma: <http://perma.cc/LSR2-CJ4L>]; Amanda Little, *This Conservative Economist Makes the Case for a Carbon Tax*, GRIST.ORG (Oct. 12, 2015), <http://grist.org/climate-energy/this-conservative-economist-makes-the-case-for-a-carbon-tax/> [perma: <http://perma.cc/2HD4-5A99>] (interviewing Greg Mankiw, who was Chairman of the Council of Economic Advisers under George W. Bush, and who argues for a policy swap).

240. See generally Richard P. Larrick, *Debiasing*, in BLACKWELL HANDBOOK OF JUDGMENT & DECISION MAKING 316, 324 (Derek J. Koehler & Nigel Harvey eds., 2004) (reviewing studies on the effectiveness of debiasing through formal training in disciplines such as economics and statistics).

III. VOTER PSYCHOLOGY AND CARBON TAX DESIGN

Section II argued that voter psychology impedes the adoption of a carbon tax. This Section assumes that carbon tax advocates somehow overcome that obstacle and discusses ways in which psychology might influence how the public thinks about the details of the carbon tax. Specifically, this Section argues that psychology biases voters against certain features of the carbon tax despite the fact that those features would make the tax more efficient.

This Section is necessarily speculative. Given that most voters pay little attention to policy debates, it is not completely clear what opinions (if any) voters might have with respect to the nuances of the carbon tax and to what extent public opinion will actually influence the law. Public opinion will almost certainly affect whether the government can adopt a carbon tax, and it will likely place broad constraints on the exact form that the tax would take, including constraints on the initial tax rate. But beyond that, the public may leave the details up to politicians and bureaucrats.

Nevertheless, understanding how the public might think about certain features of the carbon tax is still important. I will argue, for example, that the public will very likely favor a tax rate that differs from what economic analysis suggests to be the optimal rate. Given this, carbon tax proponents may want to advocate that Congress delegate the power to set the rate to an independent or executive agency comprising economists and other experts who are less susceptible to public pressure than are members of Congress.

A. *The Tax Rate*

As discussed in Section I, the optimal carbon tax rate equals the social cost of carbon. Estimates of the social cost of carbon vary depending on the model used, the discount rate applied, and assumptions about the occurrence of certain low-probability events that would cause extreme damage. As a result, the Interagency Working Group on the Social Cost of Greenhouse Gases (IWG), which provides estimates of the social cost of carbon for use by federal regulatory agencies in cost-benefit analyses, offers a range of estimates.²⁴¹ For 2015, the IWG's central estimate of the social cost was \$36 per ton of carbon dioxide, but the IWG's estimates varied depending on specific assumptions and ranged from \$11 to \$105 per ton.²⁴² This lack of precision creates cover for industry groups and environmentalists to argue in self-serving fashion for either a lower or higher rate.

What rate will the public support? The answer is highly uncertain. While the public favors action to combat global warming, support declines dramatically when pollsters mention even small costs.²⁴³ In other words, the public is not yet willing to make the sacrifice that economic models indicate is necessary. This suggests that, to garner public support, the carbon tax rate would, at least initially, have to be lower than the IWG's central estimate.

Moreover, once a small tax is in place, the public may strongly resist rate increases. After all, they would burden virtually everyone in the country. People may also become anchored to the initial rate. Behavioral economists have shown that when the intrinsic value

241. INTERAGENCY WORKING GRP. ON SOC. COST OF GREENHOUSE GASES, *supra* note 22, at 4.

242. *Id.* The estimate is stated in 2007 dollars. *Id.*

243. For a review of the evidence, see Lucas, *Behavioral Public Choice*, *supra* note 51, at 142–43.

of an item is ambiguous, consumers' willingness to pay for it can be influenced by arbitrary anchors.²⁴⁴ Similarly, the optimal carbon tax rate is highly ambiguous, so people may fixate on the initial rate and assume it is optimal even if it is not. Consistent with the notion that the initial rate may prove sticky, the public strongly opposes increasing existing taxes on gasoline and on income (except on the wealthy).²⁴⁵

On the other hand, there are reasons to believe that, after adoption of a small tax, the public *might*, over time, support (or at least not steadfastly oppose) increasing the tax rate. Various psychological forces could contribute to a slippery-slope phenomenon that would work to the benefit of those who favor a higher rate.

The first is extremeness aversion, which is the idea that "the attractiveness of an option is enhanced if it is an intermediate option in the choice set and is diminished if it is an extreme option."²⁴⁶ Because of extremeness aversion, voters may favor policies framed as the moderate position falling between two extremes.²⁴⁷ Of course, whether a policy is extreme or moderate depends on the baseline. A small carbon tax might today seem like a moderate compromise between the two extremes of no tax and the IWG's central estimate. But once the small tax is in place, the baseline may shift so that the small tax (rather than no tax) will be the new starting point in any discussions about the appropriate rate.

Second, the initial adoption of a small carbon tax could allow advocates of higher taxes to take advantage of the foot-in-the-door technique. Psychologists have shown that you can increase the chances of obtaining compliance with a large request by first making a similar, but smaller, request.²⁴⁸ Apparently, compliance with the first request creates a desire for consistency and causes people to conclude that they are the type of people who comply with such requests.²⁴⁹ So if advocates persuade the public to support a small carbon tax, then, once that tax is in place, support for a larger tax may follow more readily.

The upshot is significant uncertainty regarding what carbon tax rate the public might ultimately support. Initially, the public would likely accept, at most, only a small tax, but once the tax is in place, voters may tolerate increases.²⁵⁰ In any event, we have reason to believe that expert estimates of the social cost of carbon will have little influence on public opinion as to the appropriate rate. Instead, logically irrelevant factors will likely play a significant role.

244. See, e.g., Dan Ariely et al., "Coherent Arbitrariness": Stable Demand Curves Without Stable Preferences, 118 Q.J. ECONOMICS 73, 75–77 (2003).

245. See *Taxes*, GALLUP, <http://www.gallup.com/poll/1714/taxes.aspx> [perma: <http://perma.cc/T7D8-HL87>] (last visited Oct. 16, 2017) (providing data from as recent as April of 2017).

246. Itamar Simonson & Amos Tversky, *Choice in Context: Tradeoff Contrast and Extremeness Aversion*, 29 J. MARKETING RES. 281, 281 (1992).

247. Mario J. Rizzo & Douglas Glen Whitman, *Little Brother Is Watching You: New Paternalism on the Slippery Slopes*, 51 ARIZ. L. REV. 685, 729–32 (2009).

248. E.g., Jerry M. Burger, *The Foot-in-the-Door Compliance Procedure: A Multiple-Process Analysis and Review*, 3 PERSONALITY & SOC. PSYCHOL. REV. 303, 303 (1999).

249. *Id.* at 306–19.

250. A simple way to address this problem is to enact a low rate initially, but specify that it will increase automatically over time. See *id.* at 303, 306–19. Nonetheless, this approach does not eliminate the need to periodically reconsider the tax rate in light of new scientific evidence. See *id.*

B. Exemptions

As discussed in Section I, a broad-based carbon tax would minimize the cost of addressing global warming by equalizing the marginal cost of abatement across economic sectors so that society could not save money by reallocating abatement efforts from one sector to another. In practice, however, industry groups will lobby for exemptions, and, if they succeed, then some emissions will escape taxation. Large exemptions could dramatically increase costs. For example, if the government taxes gasoline but exempts coal used to generate electricity, then the country will forgo relatively cheap opportunities to abate emissions in power generation.

Unfortunately, exemptions will also have substantial psychological appeal for voters. While people are concerned about global warming, they also have little interest in addressing it by punishing themselves or others like themselves.²⁵¹ It will be easy to justify any given exemption by arguing that the exemption will help the poor or unburden some crucial activity or economic sector. And while the benefits (and beneficiaries) of exemptions will be obvious, their cost (and who pays them) will not—and WYSIATI. Based on what we know about their ignorance of economics,²⁵² we cannot expect that voters will appreciate the importance of a uniform marginal cost of abatement.

In this respect, the psychological appeal of carbon tax exemptions is similar to that of tax expenditures in the context of the income tax. Given the parallels between carbon tax exemptions and tax expenditures, it is not surprising that in countries that have adopted carbon taxes, exemptions are common and have at least partially undermined effectiveness.²⁵³ Similarly, the Waxman-Markey cap-and-trade bill that passed the House of Representatives in 2009, which would have priced carbon emissions in a manner somewhat similar to a carbon tax, exempted certain industries from its coverage and contained numerous subsidies for various industries that were not exempt.²⁵⁴

C. Use of Funds

As discussed in Section I, the government would have to use only a small portion of carbon tax revenue to offset the disproportionate burden that the tax imposes on the poor. What about the remaining funds?

Setting aside concerns about distribution, economists generally recommend that the government use carbon tax revenue in a way that maximizes the social benefit. In particular, many economists support using a large portion of the revenue to cut existing taxes because doing so would address the tax-interaction effect.²⁵⁵ The carbon tax will increase the price of carbon-intensive goods, which will reduce the real return to both labor and capital. In other words, the same amount of wages or investment income will not buy as much once a carbon tax is in place. In this way, a carbon tax would interact with income and

251. HSU, *CASE FOR A CARBON TAX*, *supra* note 8, at 152–70.

252. *See* CAPLAN, *supra* note 103, at 23–54.

253. David G. Duff & Shi-Ling Hsu, *Carbon Taxation in Theory and Practice*, in 8 *CRITICAL ISSUES IN ENVIRONMENTAL TAXATION: INTERNATIONAL AND COMPARATIVE PERSPECTIVES* 261, 269–75 (Claudia Dias Soares et al. eds., 2010); Boqiang Lin & Xuehui Li, *The Effect of Carbon Tax on Per Capita CO₂ Emissions*, 39 *ENERGY POL'Y* 5137, 5144 (2011); Rabe, *Carbon Taxes*, *supra* note 41, at 138–39.

254. GRAETZ, *supra* note 42, at 241–45.

255. *See supra* note 28.

payroll taxes and compound existing distortions in labor and capital markets—an effect that would operate as a drag on economic growth. The government could address this problem by using carbon tax revenue to cut existing taxes.²⁵⁶

Voters, however, appear to be oblivious to the tax-interaction effect. Polls generally find that the carbon tax does not become more popular when pollsters link it to income and payroll tax cuts. Instead, if the government opts to return carbon tax revenue to taxpayers, voters prefer to receive lump-sum refund checks.²⁵⁷ The problem with lump-sum refunds is that they do not address the tax-interaction effect, so they substantially increase the overall cost of climate change mitigation.²⁵⁸

A second possible use for carbon tax revenue is to increase spending on government programs. Increasing spending in this way would make sense if the expected benefits exceeded those associated with using the money to fund tax cuts or reduce the deficit.²⁵⁹ As a result, some economists support spending at least part of any carbon tax revenue on, for instance, improvements to infrastructure.²⁶⁰

Similarly, some economists point to the models of path-dependent innovation discussed in Section I to argue that the government should use carbon tax revenue to subsidize clean technology research, deployment, and adoption.²⁶¹ This is one point on which voters tend to agree with the experts (or at least with some experts). Earmarking carbon tax revenue for green subsidies substantially increases public support.²⁶² Similarly, experience shows that governments tend to earmark environmental tax revenue for environmental programs.²⁶³

Why? As discussed in Section II, evidence from focus groups indicates that many people ignore the incentive effects of environmental taxes and conclude that they will be ineffective unless the government uses the resulting revenue to fund environmental programs. In addition, subsidies satisfy the desire to affirmatively address global warming in an obvious and direct way by linking carbon tax payments to specific actions. They also likely reduce the pain of paying the carbon tax by linking the tax to a salient benefit.²⁶⁴ (“At least my carbon tax payment is paying for solar panels and isn’t going to waste!”)

While the public’s embrace of green subsidies is consistent with the view of some

256. Goulder, *supra* note 29, at 54–9; Williams & Wichman, *supra* note 28, at 84–89.

257. DAVID AMDUR ET AL., NAT’L SURVS. ON ENERGY & ENV’T, PUBLIC VIEWS ON A CARBON TAX DEPEND ON THE PROPOSED USE OF REVENUE 1 (2014), <http://ssrn.com/abstract=2652403> [perma: <http://perma.cc/YWBS-XSMM>].

258. CARBONE ET AL., *supra* note 26, at 7–8; Goulder, *supra* note 29, at 57.

259. On the macroeconomic effects of using carbon taxes to fund government spending or cut the deficit, see CARBONE ET AL., *supra* note 26, at 14–22; Goulder, *supra* note 29, at 59–10; and Williams & Wichman, *supra* note 28, at 89–91.

260. *E.g.*, Lawrence Summers, *Let This Be the Year When We Put a Proper Tax on Carbon*, FIN. TIMES (Jan. 5, 2015), <http://www.ft.com/content/10cb1a60-9277-11e4-a1fd-00144feabdc0> [perma: <http://perma.cc/CJD2-MU7N>].

261. *See generally* AGHION ET AL., PATH DEPENDENCE, *supra* note 71.

262. Baranzini & Carattini, *supra* note 172, at 211–13; Dresner et al., *supra* note 168, at 901; Kallbekken & Aasen, *supra* note 157, at 2187; Sælen & Kallbekken, *supra* note 169, at 2182–88.

263. Baranzini & Carattini, *supra* note 172, at 212–13.

264. *Cf.* Christopher C. Fennell & Lee Anne Fennell, *Fear and Greed in Tax Policy: A Qualitative Research Agenda*, 13 WASH. U. J.L. & POL’Y 75, 129–36 (2003) (arguing that the government could potentially reduce the psychological burden of paying taxes by supplying taxpayers with information about how tax dollars are spent and giving taxpayers a voice in spending decisions).

experts, caution is warranted. Recall from Section I that economic models of path-dependent innovation justify carefully designed subsidies. As I discuss below, the public is likely to ignore the need for careful design.

D. Carbon Tariffs

As discussed in Section I, after adopting a carbon tax, the United States could deal with the problem of free riders and leakage by taxing imports from rogue nations that refuse to place a price on carbon. Because the optimal carbon tariff will vary from industry to industry and will be difficult to determine precisely, rent-seeking industry groups may lobby for excessive tariffs, using the carbon tax as a pretext to justify protectionist policies. Given that excessive tariffs would harm consumers by increasing prices, we might expect that most voters would oppose them (if they happened to be paying attention).

Psychology, however, suggests otherwise. We have seen that people tend to divide the world into in-groups and out-groups.²⁶⁵ Members of in-groups are deemed more virtuous, friendly, and trustworthy.²⁶⁶ In extreme cases, members of out-groups become objects of disdain or hatred.²⁶⁷ Xenophobia, which is hatred or fear of foreigners, is a particularly intense form of in-group bias.

While tariffs harm consumers, they also appeal to xenophobes. Moreover, the harm that tariffs cause is not always obvious (and WYSIATI), so xenophobia may win out. In fact, in stark contrast to economists, the public generally likes tariffs and other trade barriers.²⁶⁸ As a result, if the United States adopts a carbon tax, industry groups whose members face foreign competition would likely fan the flames of xenophobia to convince the public to support excessive carbon tariffs. (“Those crafty Chinese are manipulating their currency *and* they don’t have a carbon tax. We have to protect ourselves with higher tariffs on Chinese goods!”) Concerns about excessive carbon tariffs are particularly acute at present because nationalism and protectionism have become potent forces in American politics. For example, President Trump made protectionist tariffs a centerpiece of his election campaign and argued that the United States “can’t continue to allow China to rape our country, and that’s what they’re doing.”²⁶⁹

265. See KINDER & KAM, *supra* note 220, at 21.

266. *Id.* at 19.

267. *Id.* at 8.

268. The vast majority of economists believe that the United States should reduce tariffs and other trade barriers because doing so benefits consumers. *E.g.*, Robert Whaples, *Do Economists Agree on Anything? Yes!*, 3 ECONOMISTS’ VOICE 1, 1 (2006); *China-U.S. Trade*, CHI. BOOTH: IGM F. (June 19, 2012, 9:31 AM), http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_003w6LBGnkOfDul [perma: <https://perma.cc/manage/create/>]; *Free Trade*, CHI. BOOTH: IGM F. (Mar. 13, 2012, 9:18 AM), http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_Odfr9yjnDcLh17m [perma: <http://perma.cc/M2WJ-AYJ2>]; *Trade Barriers for Sugar*, CHI. BOOTH: IGM F. (Aug. 27, 2012, 2:44 PM), http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_09vbSI37UGI6oCh [perma: <http://perma.cc/L3PX-4ALE>]. By contrast, the public supports tariffs and other trade barriers. *E.g.*, CAPLAN, *supra* note 103, at 50–84; see also *A New York Times/CBS News Poll on What Voters Think About the Campaign*, N.Y. TIMES 23 (Mar. 21, 2016), <http://www.nytimes.com/interactive/2016/03/21/us/politics/times-cbs-news-poll-2016-race.html> [perma: <http://perma.cc/V9YF-R965>] (reporting that, in each of the twelve polls taken over twenty-eight years, a majority of adults agreed that “trade restrictions are necessary to protect domestic industries”).

269. Kevin Cirilli & David Knowles, *Trump Likens Trans-Pacific Partnership Trade Deal to Rape*, BLOOMBERG (June 28, 2016, 2:43 PM, corrected June 29, 2016, 7:03 AM), <http://www.bloomberg.com/politics/articles/2016->

IV. POTENTIAL SOLUTIONS

Sections I through III argued that voters are biased against the carbon tax even though experts favor it and that voters are biased in favor of particular design features that would make the carbon tax less efficient. This Section discusses strategies for overcoming these problems. The potential solutions are to educate and debias voters, to manipulate voters' biases, and to delegate power to bureaucrats. None of these solutions are perfect, but all of them have potential.

A. *Educating and Debiasing Voters*

Educating voters about the carbon tax will be an uphill battle. As discussed in Section II, voters have little reason to pay attention to policy debates, and studies of political knowledge confirm that most do not. Moreover, even if carbon tax proponents obtain the attention of voters, persuading them to support an optimally designed carbon tax would mean overcoming the many psychological impediments discussed in Sections II and III, which is no small task.²⁷⁰

One approach, which has already been tried, is to emphasize that economists and other experts favor a carbon tax.²⁷¹ The problem with this tactic is that motivated reasoning may lead people (whether conservative or liberal) who are already skeptical of the carbon tax to question the credibility of the experts who favor it. Whether a person views an expert as knowledgeable, trustworthy, and credible depends in large part on whether he or she believes that the expert's values and worldview are in line with his or her own.²⁷² Moreover, on issues that divide people along cultural or political lines, people are often quick to discredit an expert who otherwise has impeccable credentials simply because they disagree with the expert's conclusions.²⁷³ As a result, conservatives who think the carbon tax is just another big-government scheme will likely dismiss as untrustworthy arguments to the contrary made by economists perceived as liberal.²⁷⁴ Similarly, liberal environmentalists who favor command-and-control regulations and who view the carbon tax as creating a license to pollute may dismiss contrary arguments made by economists perceived as conservative.

06-28/trump-channels-brex-it-in-anti-trade-speech-at-pennsylvania-factory [perma: <http://perma.cc/B4MW-NB7S>].

270. See Kallbekken et al., *supra* note 112, at 62–63 (presenting experimental evidence that informing people about the incentive effects of environmental taxes does little to increase their understanding of or support for the taxes); cf. Jeffrey J. Rachlinski & Cynthia R. Farina, *Cognitive Psychology and Optimal Government Design*, 87 CORNELL L. REV. 549, 606 (2002) (arguing that public education campaigns are unlikely to effectively combat voter biases about risks because “errors such as those that typically attend lay risk perception do not arise from a lack of information; they arise from the ways that information is processed”).

271. See *supra* note 9 and accompanying text.

272. Dan M. Kahan et al., *Who Fears the HPV Vaccine, Who Doesn't, and Why? An Experimental Study of the Mechanisms of Cultural Cognition*, 34 LAW & HUM. BEHAV. 501, 504–11 (2010); Michael Siegrist et al., *Salient Value Similarity, Social Trust, and Risk/Benefit Perception*, 20 RISK ANALYSIS 353, 359–60 (2000).

273. Dan M. Kahan et al., *Cultural Cognition of Scientific Consensus*, 14 J. RISK RES. 147, 167 (2011) [hereinafter Kahan et al., *Scientific Consensus*].

274. In fact, a majority of conservative Republicans believe that “climate research findings are influenced by scientists' desire to advance their careers (57%) or their own political leanings (54%) most of the time.” Cary Funk & Brian Kennedy, *The Politics of Climate*, PEW RES. CTR. (Oct. 4, 2016), <http://www.pewinternet.org/2016/10/04/the-politics-of-climate/> [perma: <http://perma.cc/6N7T-ZAL9>].

Especially relevant in this regard, Dan Kahan and his colleagues have found that people's views on various policy-relevant facts are colored by their values and by the values of what Kahan refers to as identity-defining affinity groups.²⁷⁵ Some facts become imbued with social meaning, distorting people's perceptions. In particular, a person's view of whether experts have reached a consensus on certain policy-relevant facts often depends on whether those facts, if true, conflict with the values and worldview of that person or with the values and worldview of that person's affinity group.²⁷⁶ In other words, the existence or nonexistence of expert consensus is a fact that can take on social meaning. Specifically, Kahan has found "a strong correlation between individuals' cultural values and their perceptions of scientific consensus on risks known to divide persons of opposing worldviews," including the existence and causes of global warming, the risks of nuclear waste disposal, and the effects of allowing people to carry concealed handguns.²⁷⁷ Kahan argues that people "systematically overestimate the degree of scientific support for positions they are culturally predisposed to accept," and this occurs because "of a cultural availability effect that influences how readily they can recall instances of expert endorsement of those positions."²⁷⁸ These findings suggest that carbon tax advocates may not accomplish much by informing people that, as a group, economists generally agree that the carbon tax is the best policy for addressing global warming. If that message appears to conflict with the deeply held values of individual voters or the affinity groups to which they belong, it will automatically engender skepticism.

All of this suggests that debiasing voters will be difficult, especially since opponents of the carbon tax can easily demagogue the issue.²⁷⁹ But there is reason for limited optimism. For example, progress might be possible if opposition to the carbon tax becomes disentangled from membership in the Republican Party. Researchers have found evidence that certain communications strategies can disconnect beliefs from identity, including social identity, and make people more receptive to ideas they are naturally prone to dismiss.²⁸⁰ One technique, called identity affirmation, is designed to combat the tendency to automatically dismiss information that appears to threaten strongly held values by presenting it in a way that affirms those values instead.²⁸¹ Carbon tax advocates could emphasize aspects of the carbon tax consistent with the values of Republicans and conservatives, including the possibility that the tax could be revenue neutral or that it could be adopted in connection with relaxing regulations on nuclear power. A second technique, called pluralistic advocacy, is designed to combat the tendency for people to reject the arguments of experts whose values they do not share.²⁸² Communications supporting the carbon tax could feature experts with diverse values, including Republicans and conservatives as well as Democrats and liberals.

275. Kahan, *Politically Motivated Reasoning*, *supra* note 223, at 2.

276. Kahan et al., *Scientific Consensus*, *supra* note 273, at 166–67.

277. *Id.* at 167.

278. *Id.* at 166–67.

279. See generally Scott O. Lilienfeld et al., *Giving Debiasing Away: Can Psychological Research on Correcting Cognitive Errors Promote Human Welfare?*, 4 *PERSP. PSYCHOL. SCI.* 390 (2009).

280. Kahan, *Politically Motivated Reasoning*, *supra* note 223, at 12–13.

281. Kahan et al., *Scientific Consensus*, *supra* note 273, at 169.

282. *Id.*

In addition to recruiting the assistance of a diverse group of experts, carbon tax proponents may also want to appeal to leaders within the Republican Party by arguing that a carbon tax is better than the alternatives. With evidence for global warming mounting and with denialism among the public on the wane, global warming regulation may be inevitable. Although President Trump has expressed skepticism about climate change, as recently as 2008, the Republican Party's official platform contained a section titled "Addressing Climate Change Responsibly," and John McCain, the party's presidential nominee that year, advocated a carbon cap-and-trade program, which would have effectively placed a price on carbon.²⁸³ At that time, the party's position comported with the actions of previous Republican presidents who had used cap-and-trade programs to reduce lead in gasoline and to address acid rain. But by 2009, when Democrats introduced carbon cap-and-trade legislation, the vast majority of Republicans voted against it, with many deriding it as "cap-and-tax."²⁸⁴ As a general matter, politicians, to set themselves apart and to avoid being perceived as appeasing the other side, sometimes have an incentive to confront, rather than cooperate with, their counterparts in the opposing party even with respect to proposals about which the two sides would otherwise agree.²⁸⁵ So one likely explanation for the rapid change in the Republican Party's official position on pricing carbon is that, in response to President Obama's aggressive climate change agenda, Republican politicians seized an opportunity to distinguish themselves from Democrats by rejecting a policy to which at least some of them were previously sympathetic.²⁸⁶ In fact, a sizable minority of Republicans in Congress may favor addressing global warming even though they currently are not comfortable discussing their position publicly.²⁸⁷

If the leadership within the Republican Party changes its position on the carbon tax, then we have reason to believe that many Republican voters will follow suit.²⁸⁸ Consider, for example, a recent poll that found that several important policy proposals (e.g., universal healthcare) received significantly more support among Republicans if the pollster noted that then Republican presidential candidate Donald Trump supported them than if the pollster noted that a prominent Democrat supported them.²⁸⁹ Findings like this one are consistent

283. Elisabeth Bumiller & John M. Broder, *McCain Differs with Bush on Climate Change*, N.Y. TIMES (May 13, 2008), <http://www.nytimes.com/2008/05/13/us/politics/12cnd-mccain.html> [perma: <http://perma.cc/6KR8-8NEM>]; REPUBLICAN NAT'L CONVENTION, 2008 REPUBLICAN PLATFORM (2008), <http://prod-static-ngop-pbl.s3.amazonaws.com/docs/2008platform.pdf> [perma: <http://perma.cc/PUV7-WCSN>].

284. Steven Mufson et al., *In Close Vote, House Passes Climate Bill*, WASH. POST (June 27, 2009), <http://www.washingtonpost.com/wp-dyn/content/article/2009/06/26/AR2009062600444.html> [perma: <http://perma.cc/YWD3-XNFS>].

285. Iyengar & Westwood, *supra* note 224, at 705; Sunstein, *Partisanship*, *supra* note 224, at 1.

286. Another possibility is that Republicans have succumbed to interest group pressure as influential business organizations such as the American Legislative Exchange Council have begun to fight aggressively against carbon taxes. See *Resolution in Opposition to a Carbon Tax*, AM. LEGIS. EXCH. COUNCIL (Sept. 30, 2013), <http://www.alec.org/model-policy/resolution-opposition-carbon-tax/> [perma: <http://perma.cc/DP97-N3DU>].

287. Anthony Adragna, *Many Republicans Privately Support Action on Climate*, BLOOMBERG (Aug. 15, 2014, 4:37 PM), <http://www.bloomberg.com/news/2014-08-15/many-republicans-privately-support-action-on-climate.html> [perma: <http://perma.cc/V24D-DVNR>]; Taylor, *supra* note 5, at 4–6.

288. See, e.g., Cohen, *supra* note 226, at 808 (finding that many people change their views on various political issues when informed of the positions taken by the leadership of their preferred political party).

289. Ariel Edwards-Levy, *Republicans Like Obama's Ideas Better when They Think They're Donald Trump's*, HUFFINGTON POST (Sept. 1, 2015, 5:27 PM, updated Sept. 4, 2015), <http://www.huffingtonpost.com/entry/donald->

with the evidence discussed in Part II.G that some partisans favor certain policies, regardless of their merits, simply because those policies are associated with a particular political party. At present, this phenomenon works against the carbon tax because the Republican Party is officially opposed to the policy. But that could change. In fact, evidence suggests that people are especially likely to support a policy when that policy is endorsed by a party and the endorsement appears to contradict the assumed ideology of the party's members,²⁹⁰ which would be the case if the Republican Party supported a carbon tax.

B. *Manipulating Voters' Biases*

Given that educating and debiasing voters will be difficult, an alternative strategy is simply to recognize and manipulate their biases.²⁹¹ This strategy is implicit in at least four techniques that carbon tax proponents have employed or recommended. The first technique is to time the adoption of the tax to correspond to a period in which the market price of gasoline is falling rapidly.²⁹² The apparent purpose of this approach is to take advantage of the fact that consumers may be psychologically anchored to a high gasoline price so that maintaining that price—by creating a tax that effectively offsets the decline in the market price that would otherwise occur—will be less painful and more politically palatable than adding to an already high price.²⁹³ The second technique is to link carbon tax revenue to green subsidies in an effort to leverage voters' bias in favor of these subsidies.²⁹⁴ The third technique is to reframe the carbon tax as a penalty imposed on firms that pollute rather than as a tax paid by consumers.²⁹⁵ Here, the apparent purpose is to pretend that unsympathetic (and faceless) corporations will bear the burden of global warming mitigation and hope that voters (because of WYSIATI) do not realize that those corporations will likely pass most of the tax through to consumers in the form of higher prices. The fourth technique is to combat tax-label aversion by referring to the carbon tax as something other than a tax, for example, a "climate contribution."²⁹⁶

Carbon tax proponents might rationalize attempts to manipulate voters' biases on the grounds that the ends justify the means and that if voters were fully informed and unbiased, then they would agree with the ends. In support of this position, there is evidence that, while they are initially unpopular, Pigouvian taxes can become more popular once they are

trump-republicans-democrats-poll_us_55e5fbb8e4b0c818f6196a82 [perma: <http://perma.cc/ED55-ZEZ4>].

290. Cohen, *supra* note 226, at 811.

291. Cf. Cass R. Sunstein, *The Availability Heuristic, Intuitive Cost-Benefit Analysis, and Climate Change*, 77 CLIMATIC CHANGE 195, 202–03 (2006) (arguing that, due to the availability heuristic, the public will become more likely to prioritize action on climate change if advocates can create vivid images of the disasters that it might produce, including associating hurricanes with it).

292. Summers, *supra* note 260.

293. See *id.*

294. See Baranzini & Carattini, *supra* note 172, at 211–14 (“[W]e find that in terms of acceptability the best way of recycling the tax revenues is to give the priority to environmental spending.”); Gunster, *supra* note 166, at 201–03.

295. Cf. LEISEROWITZ ET AL., GLOBAL WARMING, *supra* note 87, at 12 (finding that 66% of registered voters “support requiring fossil fuel companies to pay a carbon tax and using the money to reduce other taxes”); RES. FOR THE FUTURE, N.Y. TIMES & STANFORD UNIV., *supra* note 9, at 48 (finding that 61% of those polled support requiring “companies to pay a tax to the government for every ton of greenhouse gases the companies put out”).

296. See Baranzini & Carattini, *supra* note 172 at 214 (“[W]e also provide evidence that using a different label, viz. ‘climate contribution’ rather than ‘carbon tax’, can be beneficial in terms of acceptability.”).

adopted.²⁹⁷ For example, Maria Börjesson and her colleagues examined public support for tolls designed to curb road congestion in Stockholm, Sweden.²⁹⁸ Support was initially tepid, but increased dramatically after the tolls went into effect.²⁹⁹ A primary reason was that, after gaining experience with the tolls, more people became convinced that they worked.³⁰⁰ Perhaps the same phenomenon would occur following the adoption of a carbon tax.

Nonetheless, manipulating voters' biases is not without drawbacks. First, it may not work. In particular, the first, third, and fourth techniques discussed above may be too transparent, particularly given that opponents will seek to expose these techniques as deceptive ploys.³⁰¹

Second, attempting to manipulate voters can have unintended consequences. Shane Gunster describes how the Liberal Party in British Columbia tried to reduce resistance to its proposed carbon tax by not only describing it as revenue neutral, but also by repeatedly claiming that the tax would benefit everyone and implying that it required no sacrifices.³⁰² Gunster concludes that this strategy backfired because opponents of the tax made the obvious point that, even with revenue neutrality, not everyone would come out even.³⁰³ Once this fact was established, proponents of the tax appeared mealy-mouthed.

Similarly, the second technique mentioned above—marketing the carbon tax as a mechanism for funding green subsidies—could also backfire. We have seen that economic models of path-dependent innovation can justify subsidies for clean technology.³⁰⁴ This presents an important opportunity for carbon tax advocates because combining these subsidies with a carbon tax tends to make the carbon tax more popular.³⁰⁵ But as discussed in Section I, green subsidies must be carefully designed or they can result in wasted resources and even cause the economy to become locked into a harmful technological path. This nuance, however, will likely be lost on the public. The public's support for green subsidies does not rest on models of path-dependent innovation. After all, those models are relatively new, and public support for subsidies predates them. Instead, the public supports subsidies for the psychological reasons mentioned in Section II. Subsidies at least seem to directly address global warming in an obvious way and with little to no apparent cost. This means that public support for subsidies will likely be overbroad and extend to bad policies as well as good ones.³⁰⁶ This is problematic because certain special interest groups have an

297. See Maria Börjesson et al., *The Stockholm Congestion Charges—5 Years On. Effects, Acceptability, and Lessons Learnt*, 20 *TRANSPORT POL'Y* 1, 7–9 (2012).

298. *Id.*

299. *Id.* at 7–8.

300. *Id.* at 8–9.

301. Cf. Michaël Aklın & Johannes Urpelainen, *Debating Clean Energy: Frames, Counter Frames, and Audiences*, 23 *GLOBAL ENVTL. CHANGE* 1225, 1230–31 (2013) (presenting experimental evidence finding that any increase in support that results from framing clean energy policies in a positive light is neutralized by the presence of a negative counter frame). But see Barry G. Rabe & Christopher P. Borick, *Carbon Taxation and Policy Labeling: Experience from American States and Canadian Provinces*, 29 *REV. POL'Y RES.* 358, 360–80 (2012) (discussing instances in which states have had some limited success in increasing the price of carbon-intensive goods while avoiding the tax label).

302. Gunster, *supra* note 166, at 192–97.

303. *Id.* at 198–201.

304. See *supra* Part I.B.2.

305. See *supra* Part III.C.

306. This view finds support in the fact that the public embraces fuel efficiency standards even though models

incentive to manipulate the public's fondness for subsidies—be they industry groups seeking government handouts or overzealous environmentalists eager to see more money spent on environmental programs.

Finally, manipulating voters' biases raises ethical concerns. Starting with Immanuel Kant, a number of political philosophers and commentators have supported the principle of publicity, which holds that a political action is illegitimate unless the person taking it could at least hypothetically defend it in public.³⁰⁷ An action is incompatible with the principle of publicity when actual publicity would be self-frustrating, would undermine related policy goals, or would inevitably arouse general opposition.³⁰⁸ Consciously manipulating voters' biases via deceptive techniques satisfies these conditions and, therefore, violates the publicity principle.

On the other hand, carbon tax proponents might find that noble lies are acceptable to the extent that they counteract harmful voter biases. The philosopher and legal ethicist David Luban has argued that the strongest rationale for the publicity principle is the notion that actions or policies that cannot garner public support are, for that reason, wrong.³⁰⁹ Luban notes that the publicity principle is false if the public is "ill-informed, incompetent, [or] prejudiced," and if public officials are "less ignorant or less wrong-headed."³¹⁰ Luban himself is skeptical "that policymakers are wiser and better than their fellows" but admits that "whether and when the publicity principle is defensible" is an empirical question.³¹¹ Luban's observation provides a nice segue into a discussion of potential bureaucratic solutions to the problem of anti-carbon-tax bias.

C. *Delegating Power to Bureaucrats*

Because of voter bias and interest group influence, adopting a carbon tax through the legislative process (especially one that maximizes efficiency) will be difficult. An alternative strategy is to delegate power to bureaucrats, who are more insulated than politicians from political pressure.³¹² Jonathan Masur and Eric Posner present a compelling case that under the Clean Air Act, the Environmental Protection Agency (EPA) currently has the power to adopt a carbon tax without further congressional action.³¹³ However, due to constraints on its power, any carbon tax that the EPA adopts would be suboptimal. For example, under the Clean Air Act, the EPA could not impose the tax directly on firms that extract, process, or import fossil fuels, but would instead have to impose it further down the production chain on firms that actually emit carbon in the production process.³¹⁴ For practical reasons, this

of path-dependent innovation suggest that they may be harmful in the long run. *See supra* notes 76–80 and accompanying text.

307. For a discussion and critique, see generally David Luban, *The Publicity Principle*, in *THE THEORY OF INSTITUTIONAL DESIGN* 154 (Robert E. Goodin ed., 1996).

308. *Id.* at 172–76.

309. *Id.* at 192.

310. *Id.* at 193.

311. *Id.* at 193, 196.

312. *See* Lucas & Tasic, *supra* note 15, at 251–52.

313. Masur & Posner, *supra* note 190, at 109–19.

314. *Id.* at 115 n.89.

means that some carbon emissions would escape taxation.³¹⁵ But even a suboptimal carbon tax might be better than the alternative, especially if it paved the way for a tax that was closer to optimal.

Administratively imposed carbon taxes are tantalizing, but even if legislative action proves necessary, Congress or state legislatures might still want to delegate certain decisions to administrative agencies. These decisions might include setting and adjusting the carbon tax rate and establishing carbon tariffs, both of which are particularly suited to bureaucrats because they possess the needed technical expertise and because, compared to politicians, they also are less susceptible to influence from interest groups and biased voters.³¹⁶

Of course, delegating power to bureaucrats comes with risks. To borrow a phrase from David Luban, bureaucrats may not be “wiser and better than their fellows.”³¹⁷ Specifically, bureaucrats do not always act in the public interest, and they may instead be motivated to maximize the budget and power of their respective agencies, to enhance their own reputations, to protect their jobs and salaries, or to advance the agenda of special interest groups or industries to which they have connections.³¹⁸ In addition, bureaucrats are not themselves immune to psychological biases.³¹⁹ One problem is tunnel vision, or the tendency to focus on the agency’s mission to the exclusion of competing concerns.³²⁰ A second problem is that bureaucrats are sometimes overconfident in their ability to understand complex problems and in their proposed solutions, which can lead to rules that have unanticipated and unintended consequences.³²¹ Both tunnel vision and overconfidence are specific manifestations of WYSIATI.³²²

Nonetheless, we should keep these concerns about bureaucrats in perspective. Some of them are at least partially addressed by established administrative procedures.³²³ At the federal level, agency proposals for significant regulatory action (which would include any proposal by the EPA to create a carbon tax) generally must be accompanied by a cost-benefit analysis.³²⁴ Agency proposals are also subject to centralized review by the Office of Information and Regulatory Affairs, which gathers input from a variety of experts and interested parties and circulates proposals among the President’s advisers as well as other potentially interested agencies.³²⁵ Moreover, agencies must give notice to the public of

315. *See id.*

316. *See* JOHN F. MANNING & MATTHEW C. STEPHENSON, *LEGISLATION AND REGULATION: CASES AND MATERIALS* 351–55 (2d ed. 2013).

317. Luban, *supra* note 307, at 196.

318. For a discussion of various economic models of bureaucratic behavior, see MUELLER, *supra* note 96, at 359–85.

319. For a discussion of bureaucrats’ psychological biases, see Lucas & Tasic, *supra* note 15, at 252–57.

320. *See* Choi & Pritchard, *supra* note 106, at 33–35; Lucas & Tasic, *supra* note 15, at 253–55; Rachlinski & Farina, *supra* note 270, at 580.

321. Choi & Pritchard, *supra* note 106, at 28–29; Rachlinski & Farina, *supra* note 270, at 579–80; *see also* Slavisa Tasic, *The Illusion of Regulatory Competence*, 21 *CRITICAL REV.* 423, 428–33 (2009).

322. *See supra* Part II.C.

323. *See* Rachlinski & Farina, *supra* note 270, at 588–600.

324. For a detailed discussion of this requirement, see MANNING & STEPHENSON, *supra* note 316, at 513–23.

325. For a discussion of how the Office of Information and Regulatory Affairs operates, see CASS R. SUNSTEIN, *VALUING LIFE: HUMANIZING THE REGULATORY STATE* 11–46 (2014).

proposed regulations and provide an opportunity to comment—a process that facilitates public participation in rulemaking.³²⁶ Finally, courts can strike down regulations deemed arbitrary.³²⁷ These procedures are not perfect, but by creating a system of checks and balances, they mitigate concerns about self-interested bureaucrats who are overconfident and suffer from tunnel vision.

In addition, relative to the regulatory approach that the federal government has pursued in recent years, a carbon tax would likely reduce opportunities for bureaucrats to make mistakes or abuse their power. The federal government has been addressing global warming in a piecemeal fashion, for example, by strengthening automobile fuel efficiency standards and increasing energy efficiency standards for appliances and other equipment.³²⁸ This piecemeal approach to global warming mitigation entails a large role for bureaucrats, who have to work out the many details that convoluted regulatory regimes entail.

By contrast, as discussed in Section I, the carbon tax is a relatively simple policy tool. The most difficult tasks in implementing it are limited in number and narrowly defined, for example, determining the appropriate tax rate and carbon tariffs. If Congress delegates these tasks to an administrative agency, it could also adopt procedures to ensure transparency. Moreover, bureaucratic discretion would be constrained by scientific and economic analyses and by the threat of judicial review.

CONCLUSION

I have argued that psychology makes the carbon tax unappealing to voters despite the policy's favored status among experts. Voters are biased against the tax because they conduct an intuitive cost-benefit analysis for which costs are salient, but benefits are not. Voters also suffer from tax-label aversion, engage in motivated reasoning, and allow their emotions to dictate their views. To achieve success, carbon tax proponents will have to find ways to overcome these hurdles. A well-designed communications strategy that focuses on identity affirmation and pluralistic advocacy may soften resistance. Another promising avenue for exploration is to delegate power to bureaucrats either to adopt a carbon tax or to control key features, such as setting the tax rate.

Carbon tax proponents should also not underestimate the possibility of obtaining

326. Administrative Procedure Act, 5 U.S.C. § 553 (2012) (addressing agency rulemaking).

327. *Id.* § 706(2) (addressing judicial review).

328. 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,623, 62,624 (Oct. 15, 2012) (to be codified at 40 C.F.R. pts. 85, 86, 600 and 49 C.F.R. pts. 523, 531, 533, 536, 537); Office of Energy Efficiency & Renewable Energy, Dep't of Energy, *Appliance & Equipment Standards: History and Impacts*, ENERGY.GOV, <http://energy.gov/eere/buildings/history-and-impacts> [perma: <http://perma.cc/6PVG-KZZN>] (last visited Oct. 16, 2017). During the Obama administration, the EPA promulgated the Clean Power Plan, which creates state-specific limits on carbon emissions from power plants and then mandates that each state adopt and implement a plan to reduce emissions. Carbon Pollution Emissions Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662, 64,664 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60). The EPA's regulations specifically allow each state to incorporate a carbon tax as part of its plan to reduce power plant emissions to federally mandated levels. *Id.* at 64,836. However, the Trump Administration recently announced that it will repeal the Clean Power Plan. See Lisa Friedman & Brad Plumer, *E.P.A. Announces Repeal of Major Obama-Era Carbon Emissions Rule*, N.Y. TIMES (Oct. 9, 2017), <http://www.nytimes.com/2017/10/09/climate/clean-power-plan.html> [perma: <http://perma.cc/96E6-CS5E>].

support from Republican and conservative leaders, particularly President Trump. Much of the anti-carbon-tax bias among conservative voters stems from their general disdain for taxes and the fact that opposition to a carbon tax has become a symbol of membership in the Republican Party. If Republican leaders reverse course, then Republican voters might change their views as well. To that end, in recent years, a number of high-profile conservative intellectuals and policy makers have expressed support for a revenue-neutral carbon tax that replaces existing regulations. It remains to be seen whether they can convince the President.